IDG.net

ARE YOU EVER SATISFIED?

Our annual Job Satisfaction Survey shows that while IT workers still feel overworked and underpaid, most like their jobs. Page 50

BULLETPROOF!

Yes, you can make your desktops more reliable. We'll show you how. Page 92

QUICKSTUDY: GIS

It's more than maps. It can decide the next storefront, analyze crime data or find natural resources. Page 90

COMPUTERWORLD

THE NEWSPAPER FOR IT LEADERS ▪ WWW.COMPUTERWORLD.COM

APRIL 19, 1999 ▪ VOL. 33 ▪ NO. 16 ▪ $4/COPY

USER CONFIDENCE DROPS AS COMPAQ TUNES STRATEGY

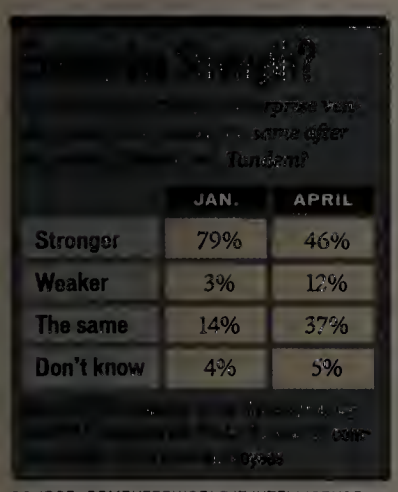
Survey shows concern; yet some IT shops see gains

BY MATT HAMBLEN
HOUSTON

Enterprise customers still want to know how Compaq Computer Corp. plans to integrate Digital's and Tandem's high-end systems, even as the company announced technology and service initiatives at its Innovate Forum 99 here.

An exclusive *Computerworld* survey of 137 information technology professionals last week showed an erosion of confidence in Compaq compared with a similar *Computerworld* poll three months ago [CW, Jan. 25]. In the earlier poll, 79% of users said the acquisitions of Digital Equipment Corp. and Tandem Computers Inc. made Compaq a stronger enterprise vendor.

Compaq, page 115



	JAN.	APRIL
Stronger	79%	46%
Weaker	3%	12%
The same	14%	37%
Don't know	4%	5%

SOURCE: *COMPUTERWORLD* IT INTELLIGENCE UNIT, FRAMINGHAM, MASS.

EDS STAYS ON WIN 98 PATH

Despite new year 2000 patch for Win 95, company will undertake massive migration

BY JULIA KING

Despite Microsoft Corp.'s release last week of a patch to make Windows 95 fully year 2000-compliant, Electronic Data Systems Corp. is forging ahead with its plans to move 100,000 desktops to Windows 98 by year's end.

EDS initially decided to move from Windows 95 to 98 based on what former CIO Gary Rudin said was Microsoft's advice about year 2000 readiness [CW, March 29]. "Microsoft will not guarantee Windows 95 will be Y2K ready," Rudin wrote in a March 16 internal EDS memo (see related story, page 16).

Rudin ended his 29-year career on March 31 for what the information technology services giant described as personal reasons. Repeated attempts to reach Rudin last week were unsuccessful.

Microsoft has steadfastly denied making any such recommendation to Rudin or EDS. "It's certainly not our policy to advise any customer on year 2000," said Don Jones, Microsoft's year 2000 product manager. "We do recommend that people go to the latest versions of operating systems, but not for year 2000 reasons."

EDS stands by its decision. "The plan is to go ahead and adopt one standard, which is Windows 98," said EDS spokesman Reed Byrum. He said the Windows 98 move "was not year 2000-related," but only three weeks ago, he

EDS, page 16

> EDS doesn't do anything without researching it.
>
> PETER BENDOR-SAMUEL, PRESIDENT OF EVEREST CORP., A DALLAS OUTSOURCING CONSULTING FIRM

PC CONTRACTS: WEASEL WORDS

Users should rewrite cloudy contract terms

BY KIM S. NASH

PC and server leasing is hotter than ever. But unaware information technology managers may overlook some critical contract terms that can cost their companies money.

Although 37% of PCs were leased in 1997, users said they expect to lease more than 48% of their PCs by the end of the year, according to a survey of 500 IT shops by International Data Corp. in Framingham, Mass. For servers, the figure jumps from 32% to 42%.

Ease of disposal is one of the

Contracts, page 115



GIORGIO FALMISANO

HER FIRST DAY ON THE JOB, CIO Ann Sullivan discovered a small army of punch-card machine operators in the basement

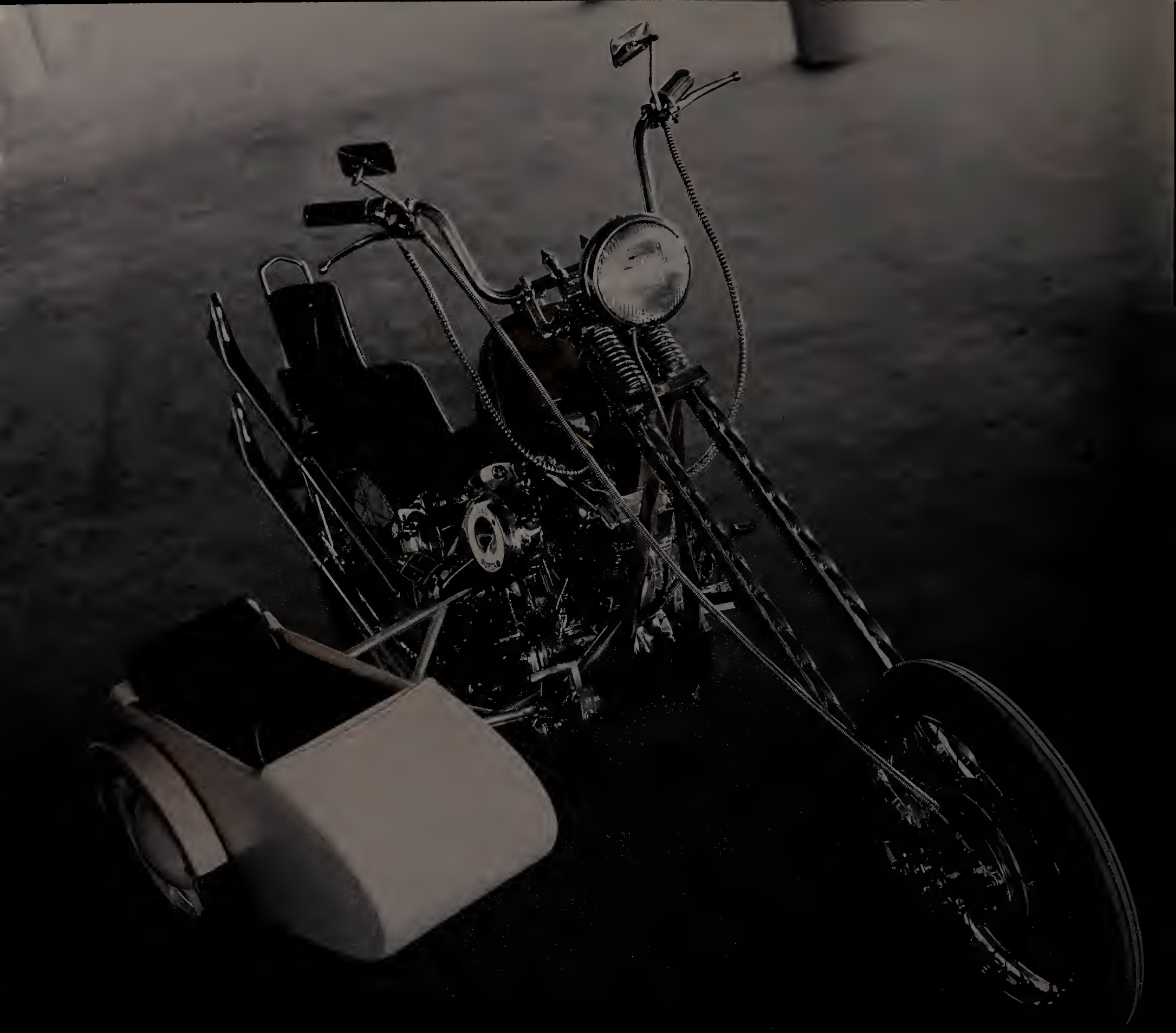
SURPRISE!

IT CHIEFS WALK INTO BUSINESS DISASTERS

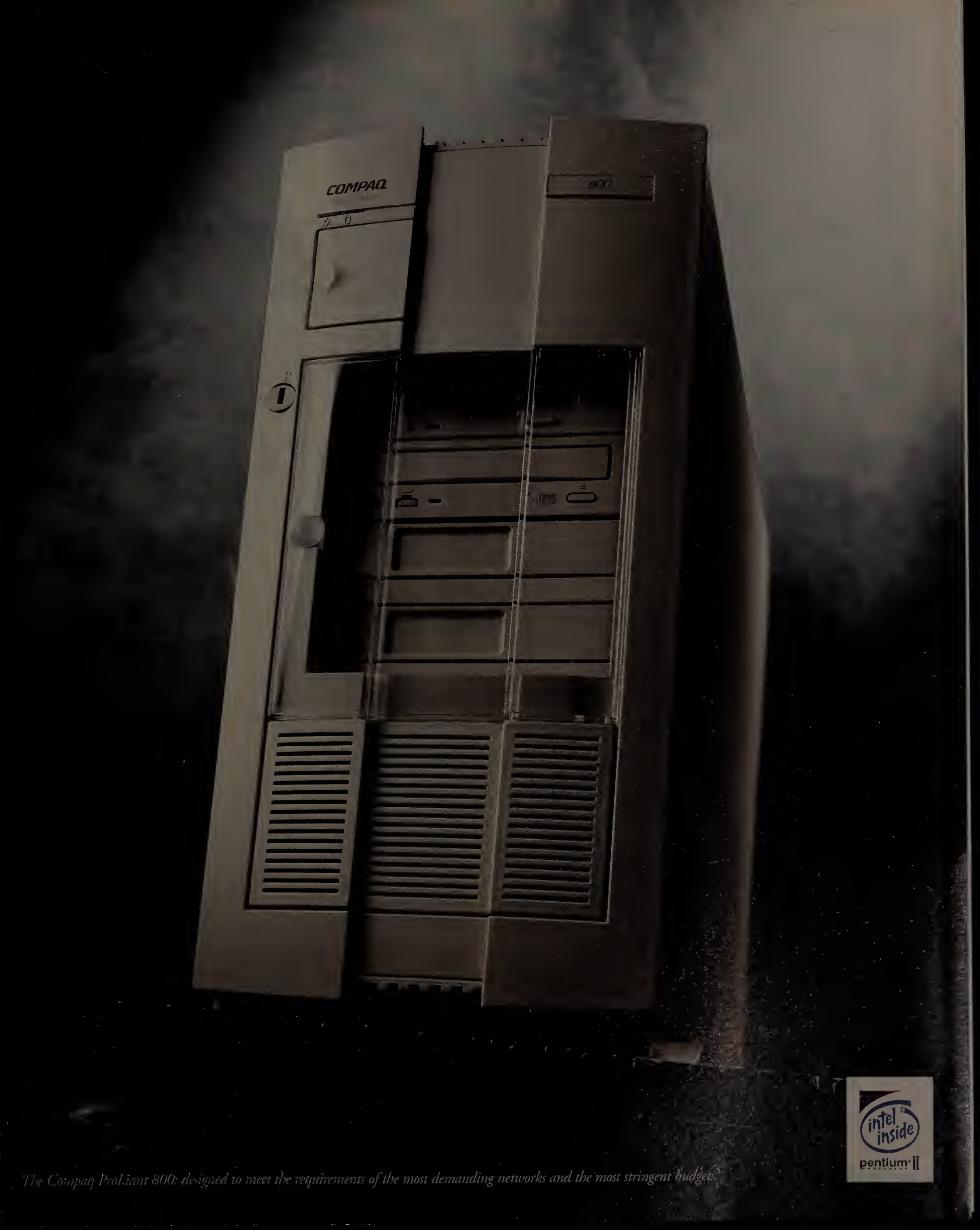
CIO TURNOVER isn't always the CIO's fault. Sometimes they start a new job only to discover a world of ancient systems, false promises, political intrigue, impending bankruptcy or sudden mergers. Or, it turns out there's a mismatch between the CIO's interests and the corporate culture, reports senior editor Barb Cole-Gomolski. The problem is that CIO candidates tend to size up a company based on its technology, overlooking business and cultural issues.

Report is on page 24.

NEWSPAPER



Can power
and economy
travel in tandem?



The Compaq ProLiant 800: designed to meet the requirements of the most demanding networks and the most stringent budgets.

NOTEBOOKS



Armada 1750
$2,799[1]

The fully integrated, durable notebook from Compaq that combines the latest key technology with uncompromising value.

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- Powerful AGP Graphics
- 24X CD-ROM[3]
- Integrated 56K V. 90 modem[4]
- Integrated AC adapter
- Intelligent Manageability pre-installed
- Optional convenience base with integrated Ethernet
- 1-year worldwide limited warranty[6]

Armada 3500
$2,999[1]

The lightest notebook from Compaq, weighing as little as 4.4 lbs. and only 1.3" thin.

- Mobile Intel Pentium II processor 333 MHz
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- 32 MB SDRAM (expandable to 160 MB)
- 12.1" CTFT (800 x 600) display
- Magnesium-alloy display casing for durability
- Optional CD-ROM or DVD via Mobile Expansion Unit
- Intelligent Manageability pre-installed
- 3-year worldwide limited warranty[6]

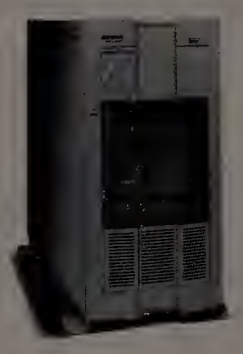
Armada 7400
$4,199[1]

The lightweight, durable notebook delivering an optimal combination of desktop equivalence and mobility.

- Mobile Intel Pentium II processor 366 MHz
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- DVD Drive
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- 3-year worldwide limited warranty[6]

These Compaq Armada Notebooks support:
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- Certification for multiple operating systems, including Windows NT® 4.0 (Microsoft® Windows® 95 standard)

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At Compaq, we believe power and economy should be virtually inseparable. Which is why you'll find souped-up performance in every single one of these eminently affordable models. That's because somewhere along the path to finding solutions that truly meet your needs, we figured out that you hate to

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- Compaq V500 15" (13.8" viewable) monitor
- Microsoft Windows 95 pre-installed
- 3-year limited warranty[6]

Deskpro EN Series Desktop 6350/4300

$1,279[1]

- Intel Pentium II processor 350 MHz
- 32 MB SDRAM
- 4.3 GB[5] SMART II Ultra ATA Hard Drive
- ATI RAGE PRO TURBO AGP
- Compaq PremierSound
- Compaq V500 15" (13.8" viewable) monitor
- Microsoft Windows 95 pre-installed
- 3-year limited warranty[6]

Deskpro EN Series Desktop 6450/10000/CDS

$1,959[1]

- Intel Pentium II processor 450 MHz
- 64 MB SDRAM
- 10 GB[5] SMART II Ultra ATA Hard Drive
- 32X Max CD-ROM[3]
- ATI RAGE PRO TURBO 2X AGP
- Compaq 10/100 TX PCI Intel NIC with Remote Wakeup
- Compaq PremierSound
- Compaq S700 17" (15.7" viewable) monitor
- Microsoft Windows NT Workstation 4.0 pre-installed
- 3-year limited warranty[6]

Deskpro EN Series Minitower 6500/10000 CDS

$2,479[1]

- Intel Pentium III processor 500 MHz
- 128 MB SDRAM
- 10 GB[5] SMART II Ultra ATA Hard Drive
- 32X Max CD-ROM[3]
- ATI RAGE PRO TURBO 2X AGP
- Compaq 10/100 TX PCI Intel NIC with Remote Wakeup
- Compaq PremierSound
- Compaq S700 17" (15.7" viewable) monitor
- Microsoft Windows NT Workstation 4.0 pre-installed
- 3-year limited warranty[6]

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- 32X Max CD-ROM[3]
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- 9 slots/7 bays
- 32X Max CD-ROM[3]
- Compaq NC3161 Fast Ethernet NIC
- Tuned and optimized with Microsoft Windows NT Workstation 4.0 to provide maximum 32-bit performance

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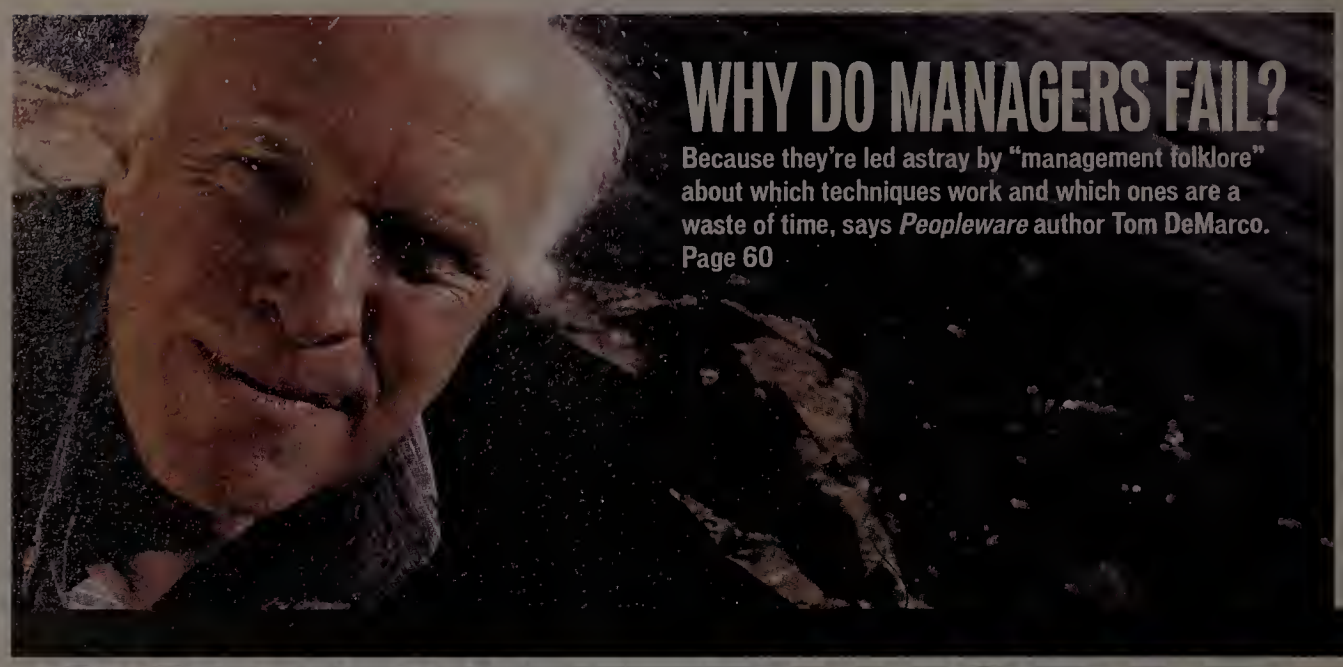
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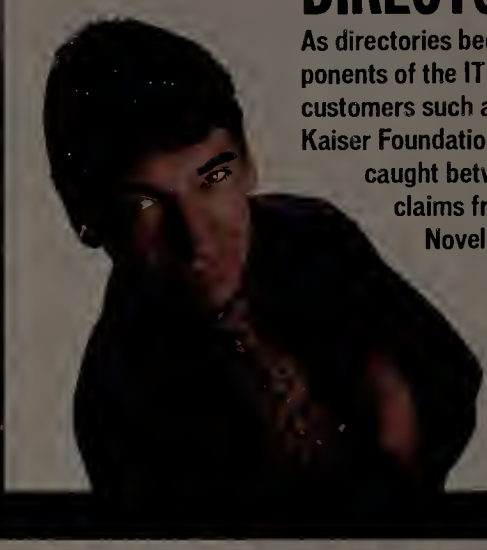
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WHY DO MANAGERS FAIL?

Because they're led astray by "management folklore" about which techniques work and which ones are a waste of time, says *Peopleware* author Tom DeMarco.
Page 60



DIRECTORY DUEL

As directories become critical components of the IT infrastructure, customers such as Denis Darveau at Kaiser Foundation Health Plan are caught between conflicting claims from Microsoft and Novell.
Page 86

COMPUTERWORLD THIS WEEK

APRIL 19, 1999

NEWS 4

4 SEARS ADVANCES methodical Web strategy with new parts/repair operation.

6 NISSAN GOOFS, sending 24,000 e-mail addresses to customers who asked for information on an upcoming model.

8 SAP, BAAN RACE to introduce electronic-commerce applications, with announcements due next week.

9 LINUX VENDORS AIM at features, ease of use to lure users out of Windows.

10 MAJOR VENDORS create new alliances to unify access to e-mail, voice-mail, faxes.

14 INTERNET PROVIDERS charge that cable-modem monopolies will stifle electronic commerce.

20 ANALYST CALLS domain monopoly dangerous, after being yanked off-line in $35 spat.

OPINION

30 BOMBS STILL FALL in the new digital age, notes Allan Alter, as he ponders the fate of a Belgrade correspondent.

35 CYBERTERRORISM is exploding, but corporate America refuses to build safeguards, Joe Maglitta warns.

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E-COMMERCE

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41 Y2K PEOPLE VOLUNTEER to help their cities and towns get ready for 1/1/00.

42 INSURERS MINE customer data to offer them services at the right time of life.

43 ERP USERS REDESIGN systems, sometimes before the initial rollout is done.

46 CANADIANS BUILD government information system — at no cost up front.

OPINION

49 USERS LIE outright about how ready they are for year 2000, Ed Yourdon charges.

50 SURVEY SHOWS a lot of job dissatisfaction in IT shops but lots of loyalty, too.

54 MERGERS THREATEN the jobs of even good IT folk. How do you survive them? Flexibility and an eye for opportunity.

60 IT MANAGEMENT FAILS because it sticks with practices that just don't work, author Tom DeMarco says.

62 USERS ABUSE the IT people who come to their aid. These tips can help you cope.

ADVICE

64 HOW VALUABLE is a Certified NetWare Engineer degree? Should a CIO go for a Ph.D.? Fran Quittel has the answers.

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69 EARLY USERS of Oracle's Web-oriented ERP tools like the user interface but see big training bills.

69 NETSCAPE DELAY means corporate users must wait for a standards-compliant browser.

71 OFFICE 2000 is easier to install than past versions — but only if you plan carefully.

HARDWARE

72 REVIEWS: We put a Sony notebook and a Compaq color palmtop through their paces.

78 SEAGATE FOUNDER Al Shugart discusses the future of storage.

NETWORKS

81 NEW TOOLS for Check Point Software's firewall are aimed at easing VPN security, reliability concerns.

81 MARRIOTT HOTEL tests Ethernet access over phone lines.

OPINION

89 FRANKLY SPEAKING: Java engines from IBM, HP and others may unlock Java's promise, Frank Hayes writes.

90 QUICKSTUDY: GIS is more than just mapping software.

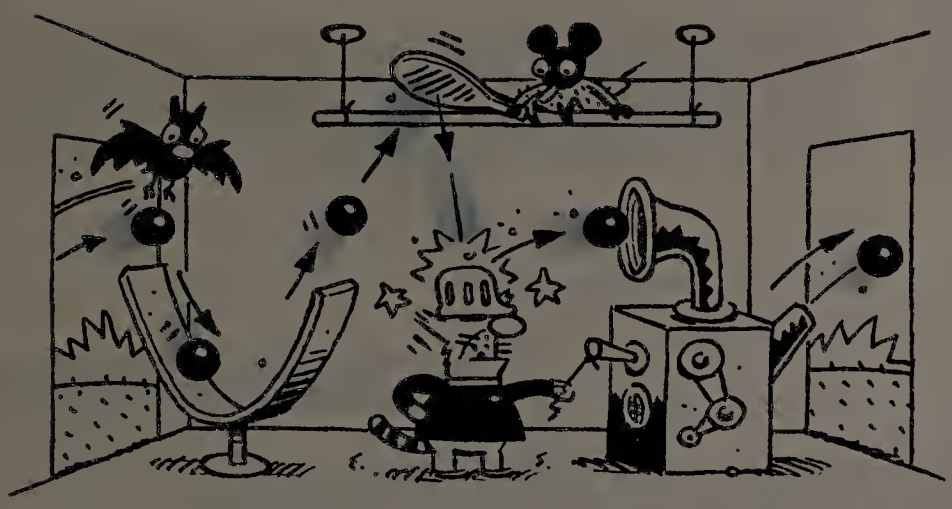
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MARSHA WOODBURY, COMPUTER PROFESSIONALS FOR SOCIAL RESPONSIBILITY, ON THE NEED FOR IT PEOPLE TO WARN NONTECHIES ABOUT POTENTIAL YEAR 2000 ANNOYANCES. SEE PAGE 41.

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AT DEADLINE

Fidelity Cites Y2K for 16.8% Income Drop

Big investments in technology projects and year 2000 costs helped drag down Boston-based Fidelity Investments' 1998 net income by 16.8%. The nation's largest mutual fund firm spent more than $100 million of its $500 million IT budget on year 2000 costs last year and expects to spend in excess of $330 million overall on its millennium bug cleanup, said a spokeswoman for the privately held company.

ERP Vendors Expand Portfolios

German enterprise resource planning vendor SAP AG has bought a 10% stake in Powersim Corp. and said it will sell the Herndon, Va., company's business simulation software. Meanwhile, Pleasanton, Calif.-based rival PeopleSoft Inc. took an undisclosed position in Corio Inc., an application outsourcing firm in Redwood City, Calif. And Denver-based J. D. Edwards & Co. announced a development program aimed at getting software vendors in retail, health care and other vertical markets to closely integrate their packages with its OneWorld business applications.

Earnings Reports

Several companies reported quarterly earnings last week (also see page 29):

- Sun Microsystems Inc. said earnings rose 25% from a year earlier, to $291.4 million on revenue of $2.9 billion, more than doubling Wall Street analysts' expectations.
- Unisys Corp. in Blue Bell, Pa., had a 77% jump in profits. Net income rose to $111.2 million from $62.7 million a year earlier.
- Iomega Corp. in Roy, Utah, reported a profit of $569,000 on $386 million in sales, but the struggling drive maker said it will continue to cut back on operations. It lost $18.6 million on $408 million in sales a year earlier.
- Middleware vendor Iona Technologies Ltd. in Dublin lost $400,000 on revenue of $21.2 million, compared with earnings of $2 million on revenue of $17.6 million a year ago.

SEARS LAUNCHES DO-IT-YOURSELF SITE

Retailer looks to Web to build online services, cut costs and cull consumer data

BY JULIA KING AND THOMAS HOFFMAN
HOFFMAN ESTATES, ILL.

FORGET the softer side. Sears, Roebuck and Co. is stocking its online shelves with power drills, weed whackers and now more than 4 million bags, bits, belts, hoses and other parts for tens of thousands of appliances, home electronics and other household items.

The Sears.com/partsdirect site, which debuted last week, is a do-it-yourselfer's dream — complete with assembly and repair manuals for products from some 400 manufacturers.

It's also a giant step in the $41 billion retailer's category-by-category migration to the Web, where total online purchases are expected to reach $18.1 billion this year, according to Forrester Research Inc. in Cambridge, Mass.

"Sears' strategy is substantially different [from other department stores] because rather than bringing the whole store to the Web at once, they're focusing on the unique product categories they have. That way, they're not competing in markets where pricing pressure can be pretty strong," said Nicole Vanderbilt, an analyst at Jupiter Communications Inc. in New York.

But Vanderbilt said she wouldn't characterize Sears as an online laggard among department store retailers. Compared with music, video and software retailers, "there simply wasn't as much of a race to the Web" among department stores, she said.

Sears first ventured online in 1997 with its extensive line of Craftsman tools.

Next came products such as toys and decorations featured in its Christmas Wish Book catalogue.

Now comes the online parts store, which is a prelude to selling washing machines, dryers and other big appliances, plus virtual services from plumbers, electricians and other home improvement experts. Sears CIO Jerry Miller said the company plans to begin selling its appliances online by the end of this month. Kevin Callahan, director of the online parts service, said Sears has trained people at its call centers who walk technicians through service calls.

"The idea would be to extend this to the homeowner," Callahan said.

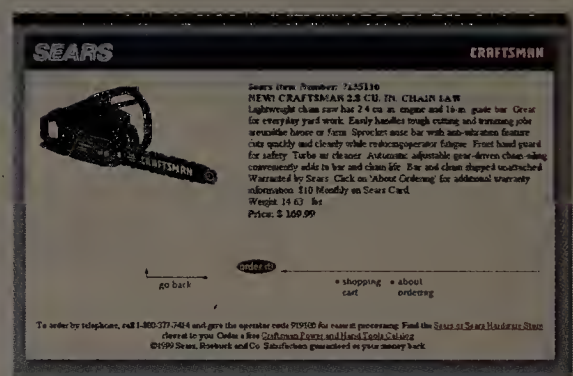
Sears' call centers now receive more than 10 million calls annually. Moving even a fraction of those to the Web would cut costs significantly because "there [are] no human hands that touch this," Callahan said. "Consumers go online and can access by model number all the information, place an order and check the status."

Sears, in turn, can use the information customers enter to fine-tune its internal inventory of parts and accessories, cutting costs even more.

"If Sears has a 10-year-old Kenmore, they'll have a better sense of what will break and what parts to stock. Any time you can get information like that about real demand, it's a good thing because you can substitute information for inventory," said John Jordan, director of electronic commerce research at Ernst & Young's Center for Business Innovation in Cambridge, Mass.

Buttressing all of Sears' electronic-commerce efforts is the retailer's massive customer database, which stores information on 97 million households. Other key electronic-commerce strengths include the retailer's extensive credit and logistics operations and Sears Home Services, which employs 15,000 technicians who service more than 15 million homes per year.

Miller said he plans to market the services by providing customers with home maintenance information such as repair schedules and seasonal maintenance procedures for heating and cooling systems. ▸



Sears' Journey to the Web

DATE	WHAT WENT ONLINE
October 1997	Craftsman tools (pictured)
November 1998	Wishbook.com (Christmas catalog)
April 1999	Parts and accessories for appliances and other equipment
May 1999	Appliances
Future	Lawn & garden products, home improvement services; ability to schedule appliance delivery

Microsoft's Allchin: Windows 2000 on Track

Says reliability is more critical to corporate users than compatibility

BY CYNTHIA MORGAN
BOSTON

Microsoft Corp. is pulling few punches when it comes to Windows 2000 migration: Sloppy code and legacy holdovers will be left behind.

"When push comes to shove, we'll choose reliability over compatibility," Jim Allchin, senior vice president and Windows 2000 team leader, told *Computerworld* Friday.



JIM ALLCHIN: Reliability key in Microsoft's Win 2000

That means, however, that to get the greatest benefit from Windows 2000 servers, corporate customers will have to migrate most — if not all — of their older Windows 3.x, 95 and 98 clients to Windows 2000 Pro as well.

And that's liable to cause problems, because client PCs could need extensive modifications to install Windows 2000.

Microsoft will ship Beta 3 of Windows 2000, the long-awaited update to Windows NT 4.0, to a half-million users early next month, Allchin said. He added that the new operating system is still on track for a 1999 release.

Microsoft went to great lengths in the past to accommodate legacy equipment and software, which Allchin said had a lot to do with client and server reliability problems.

Enterprise administration practices contribute heavily to overall reliability on clients and servers, Allchin added.

"The truth is, if you want your Windows NT installation to act like a mission-critical system, you have to treat it like one," he said.

Allchin said users "must test and install hardware and software upgrades thoroughly before deploying them," and prevent potentially incompatible components from being added to systems. ▸

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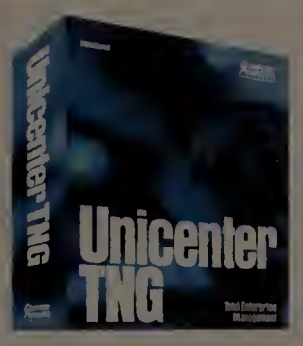
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HOTSPOT JAVA TOOL MAY GET COLD RECEPTION FROM USERS

IBM, others quicker to market than Sun

BY CAROL SLIWA

INTEREST IN HotSpot has cooled off in some circles. When Sun Microsystems Inc. releases its HotSpot Java virtual machine (JVM) later this month — more than two years after first discussing it — the performance-enhancing technology won't meet its original promise for some and will be anticlimactic for many others.

Some developers grew weary waiting for Sun's long-delayed JVM and turned to various tools and just-in-time and native compilers from IBM (which last week launched a speedier JVM for Windows), Symantec Corp. and other vendors.

"We have not been as anxious about HotSpot as we were last year," said Catherine A. T. Susch, a senior manager at Ernst & Young LLP's systems development and technology division in New York. "When you wait so long for something which doesn't happen, you start to lose interest."

Developers who expected HotSpot to improve client-side Java performance can now expect to be disappointed. Bill Pataky, a Sun senior product manager, acknowledged that HotSpot originally had been positioned as a general performance enhancer for Java. But the technology is now targeted at the server, making Java perform roughly twice as fast, Pataky said.

"We can deliver a greater benefit to the server community. That doesn't mean we always will be concentrating here," he said.

HotSpot includes an adaptive optimizing compiler that looks for the critical portions of an application based on usage patterns. It then optimizes how the byte code executes on the fly. Because server-side applications are more byte-code-intensive and tend to run for longer periods than on the client, that's where the greatest performance benefits will be, Pataky said.

Analysts acknowledged that HotSpot is less relevant now than it was once considered to be. "Other [vendors now] have the same thing," said Mike Gilpin, an analyst at Cambridge, Mass.-based Giga Information Group Inc.

Scott Preble, assistant vice president for Internet development at Citigroup Inc.'s Citibank Mortgages division in St. Louis, said the company will first increase its hardware capabilities before looking to technologies such as HotSpot. If its hardware can't do the trick, it would then consider a more mature HotSpot, he said.

Sun plans to sell HotSpot to independent software and systems vendors for a fee. But one company that has no plans to license HotSpot is IBM. "We feel we have technology that is competitive," said IBM program manager Jason Woodard. ◗

Computerworld senior writer David Orenstein contributed to this story.

Users Face Directory Dilemma

Survey compares Novell vs. Microsoft

BY JAMES CONNOLLY

Uncertainty about what Microsoft Corp.'s Active Directory will look like when it arrives might have IT managers waffling in their choice between it and rival Novell Inc.'s Novell Directory Services (NDS).

But users are counting on Active Directory to do more than their peers are asking of NDS, a *Computerworld* survey shows.

In a survey last week of 102 information technology managers, 62% said they plan to take a "wait and see or test" approach to Active Directory, and 34% of those users said they haven't decided which will be their primary directory product two years from now.

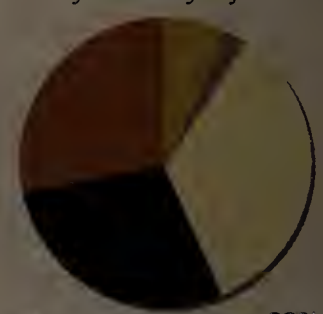
While those who are only leaning toward Active Directory or NDS are split, managers planning on using Active Directory expect to manage an average of 47% of their PCs with it. NDS sites expect to manage just 38% of their PCs with NDS.

Probable Active Directory users also expect it to perform more diverse tasks, saying they will rely on it to handle a greater percentage of their end-user profiles, system management and business logic needs.

"Active Directory will give us a central point of management. We're trying to join together two sites — one here and one in Georgia — and we want it on one network," said survey participant Kevin Flannagan, a senior network manager at John H. Harland Co. in Milton, Wash. ◗

Up in the Air

Looking ahead two years, what will be your company's primary directory software?



NDS	28%
Active Directory	28%
Windows NT	7%
Other	3%
Don't know	34%

Base: Survey of 102 IT managers at companies with 500 or more employees

SOURCE: COMPUTERWORLD IT INTELLIGENCE UNIT, FRAMINGHAM, MASS.

Nissan Sorting Out Online Marketing Gaffe

Raises privacy concerns of visitors

BY ANN HARRISON

Nissan North America Inc. in Carson, Calif., is still trying to explain how it inadvertently mailed out a list of 24,000 e-mail addresses last week to visitors who filled out a form at its Web site.

Visitors to the site (*www.nissan-usa.com)* who signed up for information on Nissan's upcoming sport utility vehicle, Xterra, received the addresses of everyone else who had requested the same data.

The company released a statement that said the e-mail addresses were collected with "the best of intentions, trying to give interested customers the Nissan Xterra information they had expressly requested."

Nissan, which sent out apology letters to everyone on the list, added it was doing everything possible to make certain such errors don't happen again.

Corporate intelligence departments routinely try to secure competitors' e-mail lists. Because the Nissan error gave them access to its full list, rivals could conduct demographic and psychographic analysis of potential Nissan customers, according to Jason Catlett, president of Junkbusters Corp., a Green Brook, N.J.-based antispam and privacy organization.



VISITORS SEARCHING for information on the Nissan Xterra got a lengthy list of addresses in response

"They are not the first company to have slipped while executing an e-mail marketing campaign," Catlett said. Gerry Tschopp, corporate communications manager at Nissan, said he had so far heard of only two complaints from recipients but insisted that the company is taking the privacy concerns seriously.

"Our position as a company is that we do not release or sell consumer information and we respect their privacy," Tschopp said.

In a similar gaffe, AT&T earlier this month mistakenly e-mailed 1,800 users of its Connect 'N Save long-distance program the e-mail address of everyone else in the program. ◗

IBM Tool Connects Web Sites, Back-End Systems

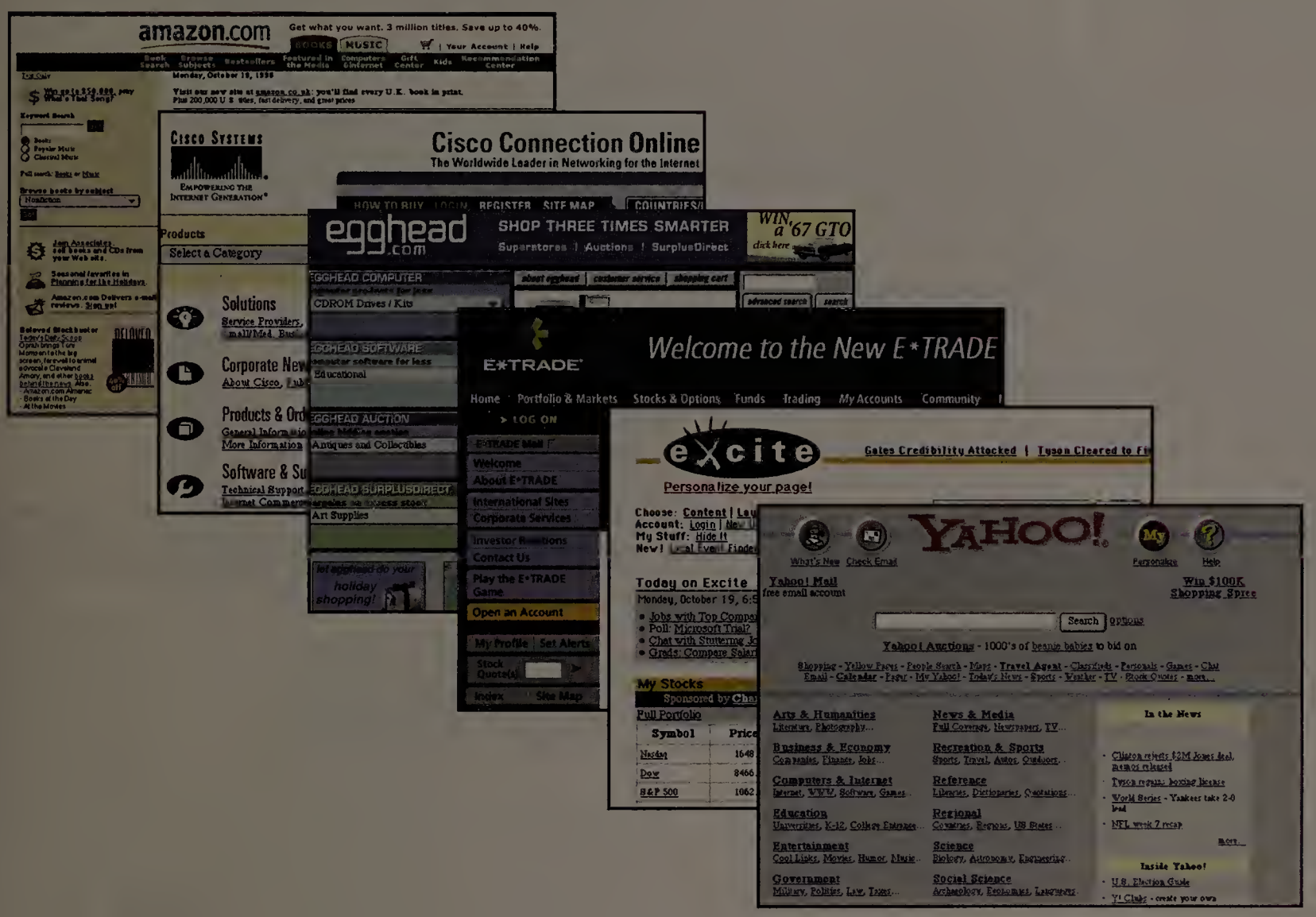
BY CAROL SLIWA
LOS ANGELES

IBM Net.Commerce users will be able to more quickly integrate their Web site front ends with their back-end systems using the Commerce Integrator software product launched last week at Spring Internet World.

IBM Commerce Integrator — an optional module for IBM's Net.Commerce software that helps businesses set up electronic-commerce sites — includes the company's MQSeries middleware for secure message delivery.

Commerce Integrator also comes with adapter mapping code that helps establish links to enterprise resource planning (ERP) and other back-end systems. So far, IBM has an adapter for SAP AG's ERP system. More links are due when the product ships later this month. An entry-level version costs $20,000; the Pro edition costs $50,000. ◗

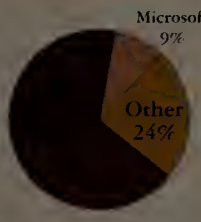
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BRIEFS

Tax Filers Faced Delay at Site

Customers of Intuit Inc. in Mountain View, Calif., who tried to file their tax returns via the Internet last Tuesday found that the popular online tax filing service was down for about 12 hours.

An Intuit spokeswoman said the site was down for a normal weekly backup.

"As we get closer to April 15, it was just an extra security measure to make sure everything was backed up," she said.

Bank Expands Web Bill-Paying Trial

BankAmerica Corp. has announced plans for an expanded pilot project to test the viewing and payment of bills on the Web. The Charlotte, N.C.-based bank, the nation's largest, said it launched the pilot's first phase last month among its employees.

Bank officials said the new system is aimed at all 32 million of its business and consumer customers.

Spending on Internet Ads Tripled in 1998

U.S. companies spent $1.5 billion on Internet advertising last year, an increase of 231% from 1997, according to a report on Internet advertising released last week by eMarketer, a New York analyst firm.

Online advertising spending will grow to $2.6 billion, an increase of 73%, by year's end, and rise to $8.9 billion by 2002, the firm predicted.

Short Takes

LAWSON SOFTWARE said it plans to resell IBM's international payroll software along with its own human resources applications. . . . L. M. ERICSSON TELEPHONE CO. will buy Internet router start-up TORRENT NETWORKING TECHNOLOGIES CORP. for $450 million in cash. . . . IBM will this week announce Application Driven Networking, an undertaking that will deliver policy-based networking to users of certain IBM networking devices in June.

ANALYSIS TOOLS ADVANCE SLOWLY

Execs say strategic analysis down the road

BY CRAIG STEDMAN
NASHVILLE

LAWSON Software Inc. has been quick to deliver high-level analysis tools tied to its business applications. But early users are moving slowly to install the full breadth of the software.

At Lawson's conference last week, several business managers involved in rollouts said the analysis applications are expected to provide a clearer picture of sales, profits and other key measurements of business performance. But the projects now under way are just the first step, the users said.

For example, Nicor Inc., a gas utility in Naperville, Ill., is building Lawson-based data marts to track the costs of construction projects, equipment and other items on an individual basis. Eventually, it wants to add tools such as a strategic financial analysis package that Lawson announced last month.

But that's "probably two to three years out," said Dan Rourke, director of financial systems at Nicor. For now, executives are focused on meat-and-potatoes budget analysis that can be done with spreadsheets, he said.

Nicor also has more pressing needs such as replacing its homegrown customer information system to support 22 new energy-related divisions that now surround the company's flagship gas utility, Rourke said.

Minneapolis-based Lawson isn't the only enterprise resource planning vendor reaching out to analysis-minded executives. Heavyweights such as SAP AG, Oracle Corp. and PeopleSoft Inc. are also putting together suites of strategic analysis applications.

"But there'll have to be some water under the bridge before [this analysis] becomes standard operating procedure at most companies," said Josh Greenbaum, an analyst at Enterprise Applications Consulting in Berkeley, Calif.

Mail-order retailer L. L. Bean Inc. also has bought some of Lawson's analysis applications — a line of performance tracking software that's tailored for different executives.

L. L. Bean's business managers need better analysis capabilities because of an in-the-works reorganization that will make them "very much accountable" for the profitability of their divisions, said Rich St. Pierre, director of accounting at the Freeport, Maine, firm.

But L. L. Bean is only developing test data marts at this point. "We don't want to push this out there until we're absolutely certain what our executives are going to want to look at," St. Pierre said. ◗

ERP Firms Rush E-Commerce Applications to Keep Up

SAP, Baan both prep Web business software

BY CRAIG STEDMAN

ERP vendors are rushing to get on the electronic-commerce train before it leaves the station without them.

Next week, SAP AG and Baan Co. plan to announce electronic-commerce applications tied to their enterprise resource planning (ERP) systems, joining rivals such as PeopleSoft Inc. and Oracle Corp. in targeting online business.

Analysts briefed by Baan said the Dutch vendor's E-Enterprise line includes packages supporting online procurement, Web-based product sales and the development of business-to-business links that use Extensible Markup Language to exchange product designs and other data.

SAP is expected to detail similar plans, starting with the release of online procurement software that has been beta-tested by 15 users since December. Both announcements will take place at the Internet and Electronic Commerce conference in New York.

Trojan Technologies Inc., a maker of water-treatment equipment in London, Ontario, wants to start using the Web to link customers and suppliers to its Baan system late this year or in early 2000. Getting the e-commerce tools from Baan should speed development and eliminate the "huge job" of integrating ERP and third-party software, said Norman Thomas, Trojan's director of information systems.

For Baan and its rivals, getting into e-commerce "is incredibly important," Thomas added. "If they don't deliver, they're going to get left behind."

But the ERP vendors are just getting started on functionality, said Steve Bonadio, an analyst at Hurwitz Group Inc. in Framingham, Mass. For example, Baan's e-commerce packages "are going to be pretty simple" at first and may not be ready to handle heavy-duty applications, he said. ◗

Correction

The chart with an April 5 News story ["What's It Take To Migrate Desktops To Windows 2000?," page 20] misstated the amount of disk space required for a typical Windows 2000 corporate client desktop. It is 6G bytes.

D.C. Notes: Privacy and Year 2000

CAPITAL WATCH

BY PATRICK THIBODEAU
WASHINGTON

Commercial Web sites would have to notify visitors of their privacy policies under a bill introduced April 15 by U.S. Sens. Conrad Burns (R-Mont.) and Ron Wyden (D-Ore.). The Online Privacy Protection Act would also give users the ability to limit the distribution or selling of personal information they provide to a Web site.

One computer industry group, the Information Technology Association of America in Arlington Va., said in a statement that the legislation would create unnecessary regulations and restrictions "on an industry that has made speedy progress toward self-regulation."

Yet in a study last year, the U.S. Federal Trade Commission found that only 14% of all Web sites had privacy policies. The FTC is now conducting a new study. If it finds little progress, it may also recommend privacy legislation.

■ The President's Council on Year 2000 Conversion is working with industry groups to develop a year 2000 reporting mechanism that will keep the president, emergency response agencies and the public up-to-date on year 2000 problems, said John Koskinen, who heads the agency.

Koskinen said the Information Coordination Center will issue public updates every four hours beginning the afternoon of Dec. 31. The agency chief said he isn't worried about the readiness of major critical infrastructures – transportation, utilities and finance – but is concerned about a cascading impact from failures by small businesses and utilities and local government agencies. "I think a lot of local failures can add up," Koskinen said.

■ The National Association of Counties and the U.S. Conference of Mayors may go to court to block a June 21 meeting of the Advisory Commission on Electronic Commerce. The groups contend that the commission, by law, should have an equal number of public and private sector representatives. There are now nine from private business and seven from government, according to a lawsuit the groups already filed against the congressionally appointed commission.

Upcoming Linux Versions Aim for Windows Ease of Use

BY DAVID ORENSTEIN

Their shots may merely bounce off the walls of Microsoft Corp.'s Windows desktop stronghold. But Caldera Systems Inc. and Corel Corp. are taking dead aim at Redmond's operating-system dominance by emphasizing ease of use and office productivity in their next versions of Linux due later this year.

Users and analysts said that even if the versions fulfill their promise of making Linux — a free variant of Unix — as user-friendly as Windows, they could still take years to challenge Windows. But they praised the efforts as being essential to Linux's struggle to gain wider acceptance.

"This kind of excites me," said Tom Stoddard, a systems administrator in the avionics division at The BFGoodrich Co. in Grand Rapids, Mich. "[Ease of use] is the last frontier. They will start to pick up some users over and above the techies they are getting today."

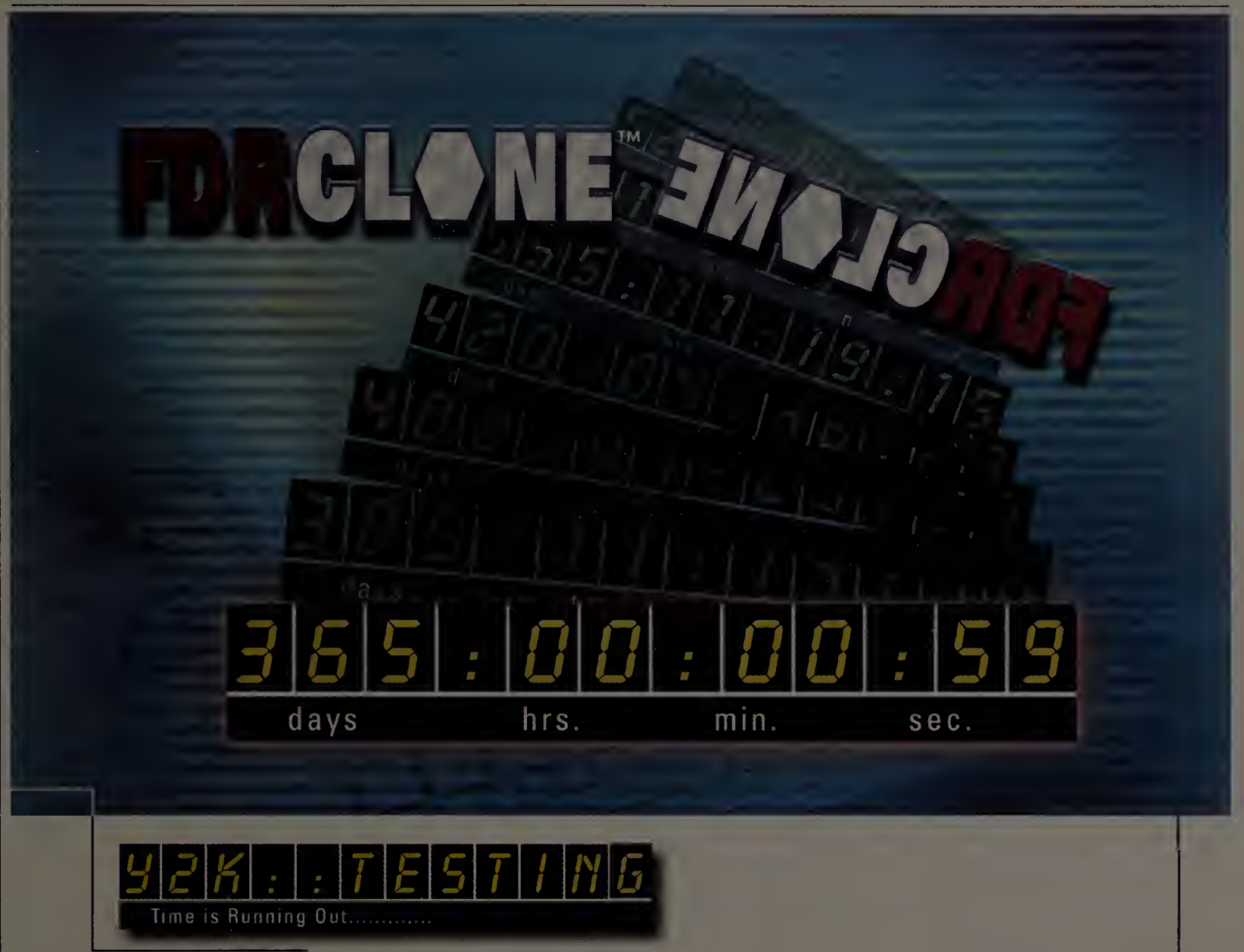
Stoddard said other avionics department users have begun to ogle his Linux desktop because of its stability, but Linux applications would need to match the broad functionality of Microsoft Office before a switch to Linux would be feasible. Even Stoddard still does his expenses on Excel.

Users at McCall Pattern Co. in Manhattan, Kan., a maker of sewing patterns, wouldn't be able to run Linux desktops without assurance that they could flawlessly port applications built on Microsoft Office, said technical support manager Lynn Newman.

Few companies would run Linux alongside Windows, said George Weiss, an analyst at Gartner Group Inc. in Stamford, Conn. Companies won't save money or gain productivity with Linux if end users also need to license and run Windows for certain tasks.

To address those needs, Ottawa-based Corel will likely marry the Windows-like K Desktop Environment graphical user interface with the well-respected, noncommercial Debian version of Linux and its closely associated applications. A beta version of Corel's offering will be available in August. The company will follow up with a full version of its WordPerfect office suite for Linux this fall, including Quattro Pro spreadsheet and Presentations software.

Meanwhile, Orem, Utah-based Caldera will announce Version 2.2 of its OpenLinux, which also uses the K Desktop Environment interface, at Comdex/Spring '99 in Chicago this week. To ease installation, the Version 2.2. CD runs automatically from Windows and includes PowerQuest Corp.'s drive partitioning and boot managing software. OpenLinux 2.2 also includes WordPerfect 8 and StarDivision GmbH's StarOffice.



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Industry Heavyweights Join Push to Unify Phone, E-Mail, Fax Messages

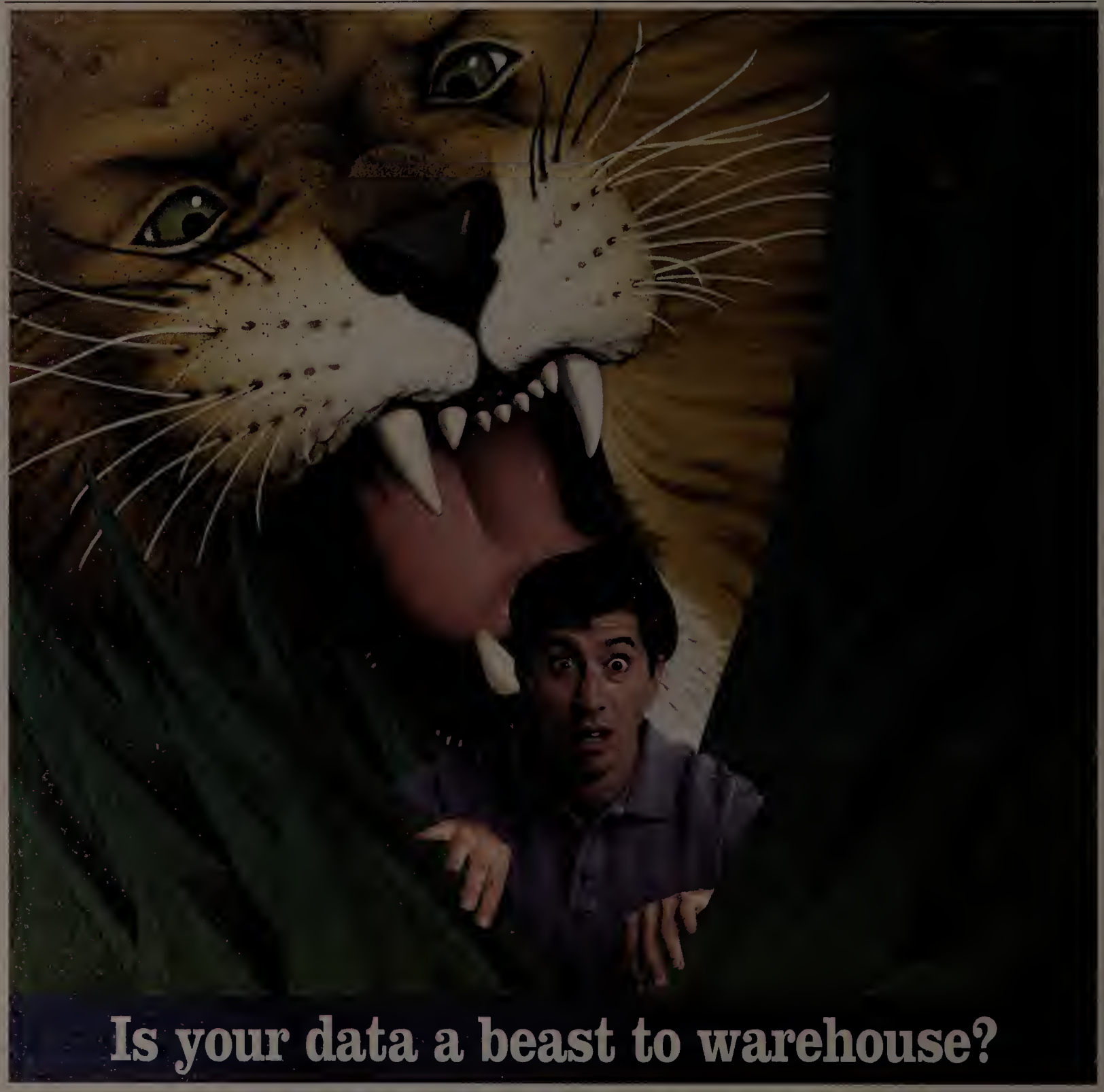
BY BARB COLE-GOMOLSKI

Key industry players last week said they're coming together in an effort to deliver unified messaging to customers.

Sun Microsystems Inc. and Atlanta-based Premiere Technologies Inc. announced that Premiere will purchase hardware, software and services from Sun, and Sun will market Premiere's Orchestrate.com unified messaging service.

Separately, Compaq Computer Corp. and Lucent Technologies Inc. announced an alliance that they said will yield improved integration between Compaq hardware and Lucent's unified messaging system.

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JUST THE FACTS

The Unified Approach

- Premiere Technologies selects Sun and Netscape software to power its unified messaging network
- Sun will resell Premiere's unified messaging service
- Lucent will integrate its unified messaging system with Compaq servers

Ovum Inc. in Burlington, Mass., estimated that the unified messaging market will be a $31 billion business by 2006, but lots of companies have resisted it because it's difficult to integrate the systems with existing e-mail and voice mail.

"By joining forces, [those vendors] are trying to relieve some of that pain," said Blair Pleasant, an analyst at Pelorus Group Inc. in Raritan, N.J.

A Hosted Service

Premiere said its strategy is to offer unified messaging as a hosted service. It already has 800,000 voice-mail customers and will offer those users a chance to "upgrade" to unified messaging.

That's where Sun and its partner Netscape Communications Corp. come in. Sun's servers and operating system and Netscape's messaging software will be added to Premiere's current infrastructure so users can manage e-mail, faxes and voice mail.

In the Lucent/Compaq deal, Lucent will integrate and sell its Octel Unified Messenger for Microsoft Corp. Exchange Server on Compaq's ProLiant and AlphaServer platforms. In addition, Compaq will resell Octel Unified Messenger.

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ARREST MADE IN NET STOCK FRAUD CASE

Bloomberg Web site spoof highlights speed of online crime investigation

BY ANN HARRISON

A NORTH CAROLINA engineer who allegedly used a phony online news story to raise the price of his company's stock last week was arrested by FBI agents who traced him through the IP address on his computer.

The fictitious story was formatted to look as if it came from the Bloomberg Web site, Bloomberg.com. This was the first case in which an individual has created a fake Web site to spread false news to millions of investors, said U.S. Attorney Alejandro N. Mayorkas.

Gary Dale Hoke, 25, an employee at PairGain Technology Inc. in Tustin, Calif., was arrested for securities fraud after fabricating the story that his company was being acquired.

Attempting to find the perpetrator, Bloomberg last week shot off subpoenas to Yahoo Inc. in Santa Clara, Calif.; Lycos Inc. in Waltham, Mass.; the operators of Techstocks.com (a stock discussion site); and Angelfire.com. A grand jury subpoena was issued by investigators to Internet service provider Mindspring Inc., which identified Hoke as the user of an account used in the scam.

PairGain stock shares jumped 31% on April 7 and trading volume was nearly seven times the norm before the ruse was revealed.

Cops and Robbers Online

"The Internet is a tool that is very powerful, effective and cheap when it comes to perpetrating all sorts of fraud in the markets," said Securities and Exchange Commission spokesman John Heine. On the other hand, it's now easier to catch criminals online, he added.

The FBI investigation revealed that Hoke used a free Web page service operated by Angelfire.com, which is owned by Lycos, and free e-mail service operated by Microsoft Corp.'s Hotmail.com. Despite attempts to cover his tracks, the FBI traced Hoke through his company's IP addresses, which were recorded when he accessed the Angelfire and Hotmail services.

Kim Gower, director of corporate communications at PairGain, said the company provided information to the U.S. attorney's office about who had accessed the Angelfire site during a certain time period. Hoke is an engineer at the company's design center in Raleigh, N.C.

Richard Klein, an attorney representing New York-based Bloomberg LP, said Hoke will be named in a preexisting lawsuit filed by Bloomberg against the anonymous publisher of the Web page and four other "John Does" who used screen names to pass along the false story on stock discussion sites, including Techstocks.com.

Bloomberg, which runs a large business news operation, is seeking unspecified cash damages and a court order compelling the spoofer to destroy material that infringes on Bloomberg trademarks. ◗

PeopleSoft Narrows Manufacturing Focus

Tells user group it will target discrete and repetitive manufacturing arena

BY CRAIG STEDMAN

PeopleSoft Inc. last week confirmed it's narrowing the focus of its manufacturing software in an attempt to boost sales of the 3-year-old applications, which are now being used by about 50 companies.

The plans were divulged to PeopleSoft's manufacturing user group at a meeting last month. Key pieces include a decision to concentrate on discrete and repetitive manufacturing, and the formation of vertical industry units with their own sales teams and product managers, who will funnel requests for new features to PeopleSoft developers.

To users attending the meeting, the plan sounded like a more sensible way of reaching out to manufacturers.

"You have to pick your battles, and I think they've drawn some lines in the sand and said this is what they're going to focus on," said Jim Prevo, CIO at Green Mountain Coffee Inc. The Waterbury, Vt., coffee maker was the first user to go live with the manufacturing applications in mid-1997.

Until now, users and analysts said, PeopleSoft tried to sell the manufacturing software in much the same way its flagship human resources and financial applications are marketed. But those applications are largely the same for all users. The functionality needed by manufacturers differs greatly from one industry to another, said Dan Rich, director of information systems at VisionTek Inc., a Gurnee, Ill., computer parts maker that uses PeopleSoft software.

A Full Deck

The addition of manufacturing gave PeopleSoft a full suite of applications to stack up against SAP AG's R/3 and other enterprise resource planning systems. Users such as Prevo and Rich said they have no big complaints about the quality or capabilities of the PeopleSoft software.

But sales haven't met expectations, said Jim Holincheck, an analyst at Giga Information Group Inc. in Cambridge, Mass. Among Giga's clients, interest in the PeopleSoft manufacturing line "is practically nil," he said.

About 125 manufacturers have bought at least some of the applications, a total with which PeopleSoft is "reasonably pleased," said David Obershaw, a marketing vice president at the Pleasanton, Calif., vendor. Manufacturing verticals now being emphasized include consumer packaged goods, retail, high-tech and automotive, he added. Midsize users are also a big target. ◗

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Oracle Users Zero In on Upgrade Path

8i database getting closer scrutiny

BY STEWART DECK
DENVER

Database tuning, upgrades and security issues grabbed their share of Oracle users' attention last week at the International Oracle Users Group-Americas (IOUGA) meeting here, where the latest features of Oracle Corp.'s new 8i database were also on display.

Upgrading databases is a particularly hot topic because more than 50% of Oracle users are still using older Release 7 versions of the database.

Users are feeling a growing urgency to upgrade because Oracle is no longer providing support for Version 7.3.3 and earlier versions. They are also looking for the increased functionality and speed of newer versions to support new Internet and intranet systems.

"The role of the database administrator is changing," said Merilee Nohr, president of IOUGA. "They're being asked to do so much more now than ever before with Internet databases and intranet applications," so they came to the conference looking for help and answers, she added.

"We're in the process of upgrading, and it helps to hear how others are approaching this and what experiences they've had," said Brian Bright, a database administrator at United Parcel Service of America Inc. in Louisville, Ky.

"People want to see how 8i works and . . . its benefits," said Richard Niemiec, a consultant in Lombard, Ill., and IOUGA executive vice president.

Willard Baird, a security specialist at Florida Power Corp. in St. Petersburg, Fla., said Web security has become a vital topic to administrators. "Some people think you can do it all with a firewall and with built-in security features. They should also be considering authentication measures, session auditing and data encryption," Baird said.

Database tuning sessions were also hot.

"Instead of asking for more money to spend on speeding up database performance, I'm here to learn features and tricks that may help me do that," said Kew Ray, a database administrator at Integrated Systems International, a Schaumburg, Ill.-based consultancy.

Tom Warfield, manager of data warehouse development at Claritas Inc., an Arlington, Va.-based developer of business data software, also was interested in database tuning. "We're always trying to improve it, along with finding ways to get more of our users involved in actually using the warehouse," he said. ◗

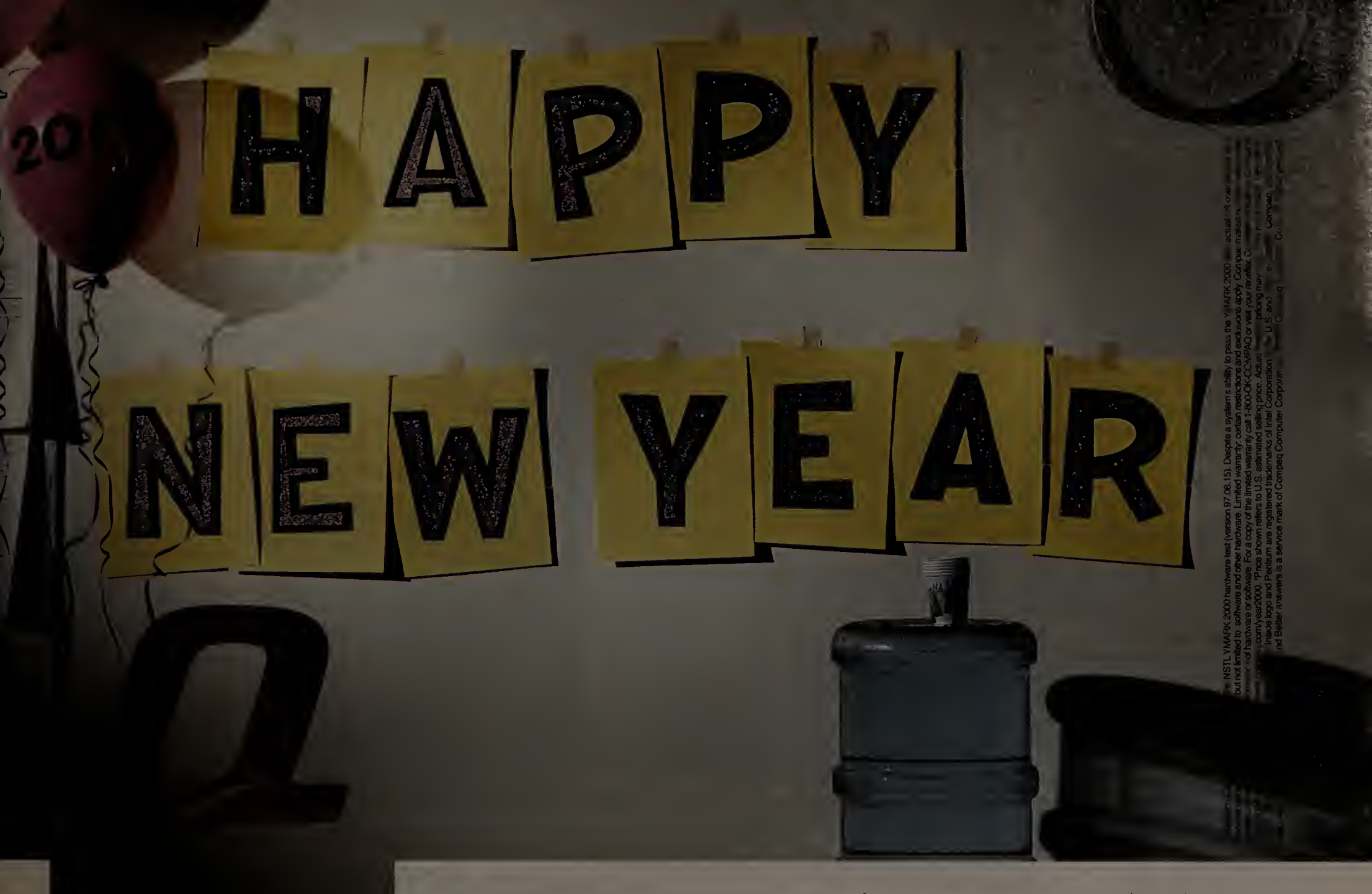
JUST THE FACTS

Oracle Users' Hot Topics

- Upgrading and tuning your database
- New features in Oracle8i
- Implementing data warehouses
- How to develop, model and deploy applications
- How to support ERP systems

MOREONLINE

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BRIEFS

Banks Ready for Y2K

Of the 5,867 U.S. financial institutions it monitors, the Federal Deposit Insurance Corp. found that nearly 160 aren't doing a good job on year 2000 repair efforts. Separately, The Nasdaq Stock Market Inc. announced it has successfully completed the last in a series of industrywide year 2000 tests.

Group: Phone System Will Survive Y2K

The U.S. telephone network will likely survive any year 2000 problems, according to a report released last week by the Alliance for Telecommunications Industry Solutions, whose members include carriers and equipment vendors. The laboratory simulated the following key rollover dates: Dec. 31, 1999, to Jan. 1, 2000; Feb. 28, 2000, to Feb. 29, 2000; Feb. 29, 2000, to March 1, 2000; and Dec. 31, 2000, to Jan. 1, 2001.

IBM, Microsoft Do Digital Tango

Microsoft Corp. and IBM launched competing systems last week for downloading secured digital music files from the Web. Both aim to enter the $40 billion music industry and are contenders for a digital music security standard proposed by the Recording Industry Association of America.

HR Lags on Y2K

Only 49% of all corporate human resources information systems are year 2000-ready, according to a survey of 322 corporate executives by Olsten Corp. in Melville, N.Y. A total of 22% of the respondents said they were analyzing their systems; 21% said their systems are year 2000-compliant.

Short Takes

MATTEL INC. is spending $50 million to launch an Internet venture that may eventually go public. . . . JOHN HANCOCK MUTUAL LIFE INSURANCE CO. said it will outsource a large application migration project to IMRGLOBAL CORP.

NET ACCESS FIGHT LANDS IN CONGRESS

Internet providers ask for equal access to cable industry's high-speed networks

BY PATRICK THIBODEAU
WASHINGTON

INTERNET service providers last week urged Congress to ensure that cable companies don't gain exclusive control over cable-modem access to the Internet, claiming it could stifle the market.

The broadband industry is still in its early stages, but experts say high-speed Internet access will boost electronic commerce by improving response times at multimedia-heavy Web sites. Cable modem is the leading broadband access medium, with about 500,000 users. Digital Subscriber Line totals about 200,000 users.

Congress is being asked to resolve a dispute pitting Internet service providers against cable companies.

At a Senate Commerce Committee hearing, America Online Inc. CEO Steve Case called for legislation that would give his company and other service providers access to the cable industry's high-speed networks.

But James Robbins, president of cable company Cox Communications Inc. in Atlanta, testified that the regulations would have a "chilling effect" on capital investment in those networks, slowing their rollout.

Charles Brewer, CEO of MindSpring Enterprises Inc., an Atlanta-based Internet service provider, said the lack of access to cable networks will hurt competition and impede consumer adoption. He said cable companies should follow the same regulations that require telephone companies to sell wholesale network access to competing providers.

MindSpring now offers cable modem service under a similar, private arrangement. The company buys cable access from Knology Holdings Inc. in West Point, Ga., and sells cable modem service in a number of cities in the South. Knology's parent company, ITC Holding Co., owns a stake in MindSpring.

The Commerce Committee isn't taking sides. Sen. John McCain (R-Ariz.), the committee chairman, said he would propose legislation asking for a recommendation from federal agencies.



PATRICK THIBODEAU

AOL'S STEVE CASE and other Internet executives say high-speed network access is crucial

Consumer adoption of high-speed access will improve the ability of merchants to market products online, said Marc Adler, who recently opened an online store for artists' supplies, MisterArt.com in Atlanta. "What's important is that we have a wide variety of choices so there is competition" for broadband services, he said.

Broadband is "critically important" to electronic commerce, said Liza Henderson, an analyst at TeleChoice Inc. in Boston. "I think in the end, users will require more and more real-time response times and access to information."

HP OpenView to Boost Business Support

Tools help users meet service level pacts

BY BOB WALLACE
BOSTON

To help IT managers meet service level agreements, Hewlett-Packard Co. said it will offer new tools for its OpenView management environments. It also promised offerings to support the deployment of business services.

At an HP user conference here last week, its OpenView business unit announced a policy networking package, software to measure application response times, an integrated package for managing SAP AG R/3 and management plug-ins. Those plug-ins will manage R/3, PeopleSoft Inc. and BEA Systems Inc. applications as well as Web servers from Microsoft Corp., America Online Inc.'s Netscape division and Apache Group (see chart).

JUST THE FACTS

OpenView Unit News

New products:
- OpenView Response Time Workbench
- OpenView Manager for SAP R/3
- OpenView Smart Plug-ins
- OpenView Policy Xpert
- Desktop Administrator 5.0

Enhancements:
- OpenView Network Node Manager 6.1
- OpenView IT Service Management
- HP Desktop Administrator 5.0
- GlancePlus Pak 2000

Hewlett-Packard also:
- Will resell Sterling Software mainframe management wares
- Signed global service and support deal with Ernst & Young
- Announced a certification program

SOURCE: HEWLETT-PACKARD, PALO ALTO, CALIF.

To survive in an era of information technology outsourcing, operations staff must realize that they need to do more than just manage devices and instead focus on efforts that will result in business success, said Richard Ptak, an analyst at Hurwitz Group Inc. in Framingham, Mass.

"HP is providing what we need to determine the state of health of key applications and whether or not we're meeting service level agreements," said Sandra Potter, president of the OpenView Forum International user group and a former IT staffer at Air Products & Chemicals Inc. in Allentown, Pa.

"Everybody really wants to increase efficiency and reliability without growing large IT staffs," said Larry Shirley, systems architect at R. R. Donnelley Financial, the Lancaster, Pa.-based financial printing unit of R. R. Donnelley & Sons Co.

HP's new products "enable one person to handle more of [his] IT environment. This reduces administrative costs and could save long-term on personnel," Shirley said. He is particularly interested in HP's product for simulating traffic loads on networks.

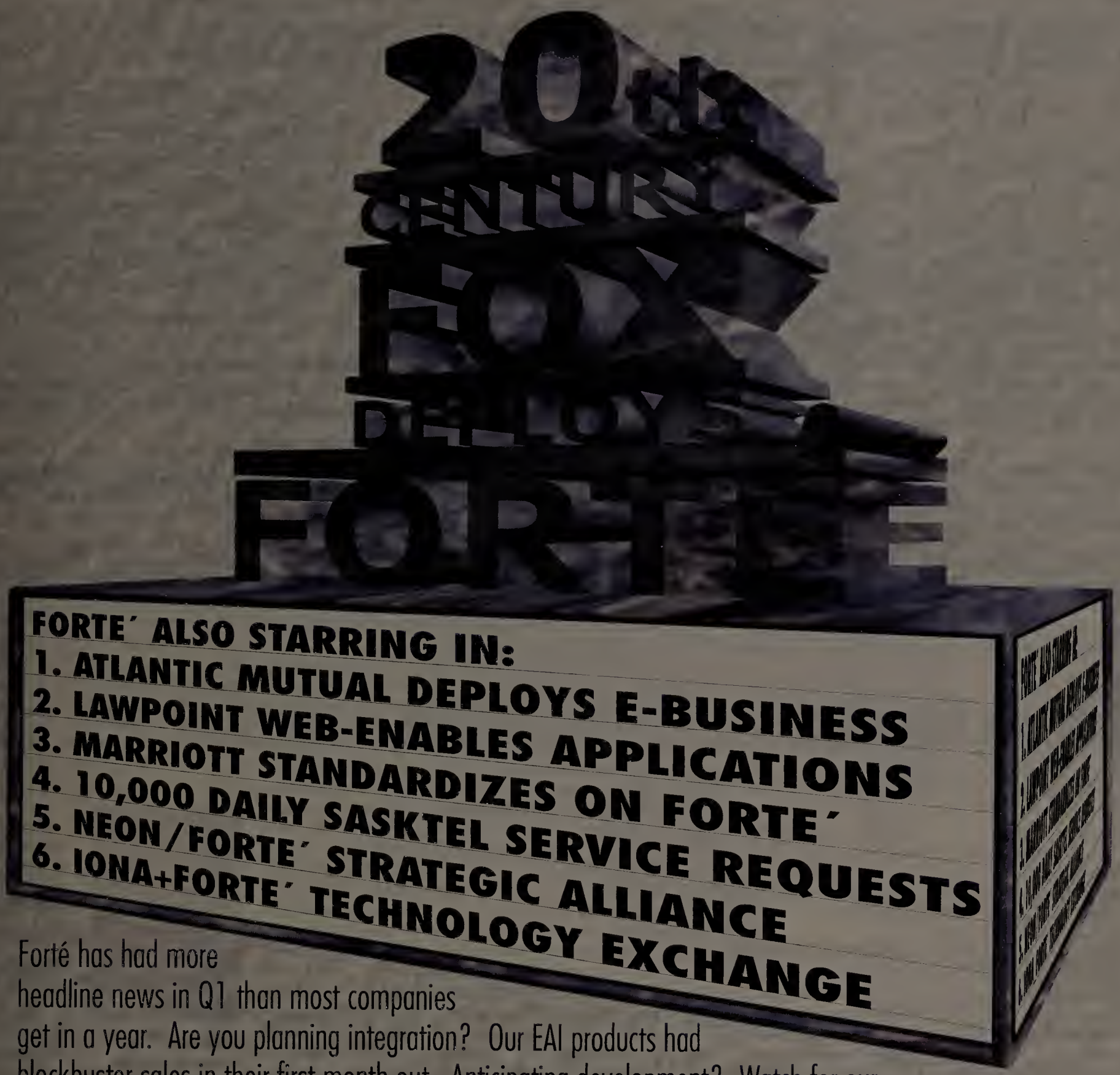
At Duke Energy Corp. in Charlotte, N.C., senior network engineer Paul Edmunds plans to check out HP's new policy networking package.

"We've looked at ones from others, but want to see how HP's fits in with OpenView," Edmunds said. He said the package, which lets users prioritize network usage by placing mission-critical applications ahead of less-critical ones, would give him control as more applications are deployed.

HP's new package for measuring end-to-end application response time and availability piqued the interest of one user.

"Applying this capability to PeopleSoft applications would help us meet service level agreements," said an IT staffer at a large aircraft maker who requested anonymity.

He said policy networking would also help guarantee performance for delay-sensitive voice- and video-over-IP applications.



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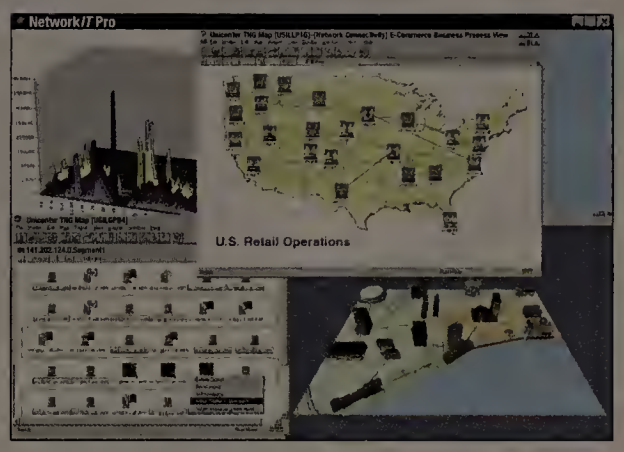
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HP DRIVES HARD, SOFT AT USERS

New HP Unix server boosts drive to Net

BY MARC FERRANTI
NEW YORK

HEWLETT-Packard Co. last week announced the HP 9000 N-Class Unix server designed for engineering and Internet-based business applications.

Set for release next month, the machine will let users upgrade to future IA-64 processors — which HP has worked with Intel Corp. to design — by replacing the motherboard, HP officials said. Prices will start at $48,000.

The machine scales up to eight processors and is at the heart of HP's drive to be at the center of the Internet market by offering the ability to run mission-critical Web applications at midrange server prices.

"That's an awful lot of performance for a price of low midrange," said Christopher Willard, an analyst at International Data Corp. in Mountain View, Calif. That type of performance could bring high-end analysis and engineering applications to a new class of users, Willard said. For example, small auto parts makers would be able to perform advanced auto crash analysis, he said.

One issue HP will have to deal with is the dual upgrade path the machine provides — to IA-64, which runs Intel-based software like Windows NT, as well as to future Unix chip architectures. That will take a toll on HP services and support.

The upgrade path to IA-64 is a big attraction, said Geri DiCostanzo, executive vice president of Securities Industry Automation Corp., which provides technical service to the New York Stock Exchange. ◗

Ferranti writes for the IDG News Service in New York.

BEA alliance offers more middleware for Web applications

BY JAIKUMAR VIJAYAN

THE ALLIANCE between Hewlett-Packard Co. and BEA Systems Inc. should give HP users needed integration middleware to conduct business over the Web.

Under an April 7 agreement between the two companies, HP will commit $100 million to BEA during the next three years — and BEA will invest an additional $50 million — to develop and support cross-platform middleware and component technology. Products resulting from the deal should help shops with a mix of HP 9000 Unix systems as well as HP 3000 machines and Windows NT servers.

Middleware technologies allow companies to tie together different applications needed for electronic commerce like financial, planning, marketing or manufacturing systems. Application components are blocks of code that reduce the amount of original code that people need to develop when writing Web applications. Such capabilities are crucial for conducting electronic commerce, said Michael Sellitto, director of technical services at Rich Product Corp., a $1 billion food products company in Buffalo, N.Y. The company has just embarked on a companywide application integration project to eventually conduct transactions with its suppliers via the Web.

"It would be great if HP could deliver the whole range of products needed by us to seamlessly integrate applications," Sellitto said.

The move comes at a time when HP is reorganizing and trying to hammer home its Internet focus (see story at left). Under the deal, both HP and BEA hope to develop products that build on BEA's eLink application integration suite and components based on the BEA WebLogic application server.

"HP's strategy for e-commerce is based on teaming with companies to provide the missing links it doesn't have or want to develop," said Marty Gruhn, an analyst at Summit Strategies Inc., a market research firm in Boston. ◗

JUST THE FACTS

HP, BEA Team Up

Purpose: To develop middleware for electronic-commerce projects

HP contributes: $100M over the next three years

BEA contributes: $50M and 200 people to the project

Analyst Company Upset Over Lost URL, Bill Dispute

Blames domain-name firm for poor service

BY TOM DIEDERICH

The company that calls itself the "dot-com people" needs to work on its people skills, an analyst firm that specializes in information technology complained last week.

Network Solutions Inc. (NSI) is the Herndon, Va., company that — until next month, at least — enjoys a virtual monopoly on domain-name registration. NSI infuriated Boston-based Aberdeen Group Inc. this month by pulling the plug on its Web presence.

On April 1, NSI deleted Aberdeen's Web site and e-mail capabilities from the domain name server tables that control the routing of messages over the Internet, Aberdeen Vice President David Alschuler said. The site was back online 36 hours later, after Aberdeen paid — for the second time — NSI's $35 annual domain name registration bill.

It was an apparent case of the check getting lost in the mail. NSI yanked the site after sending Aberdeen three notices of nonpayment of the annual registration fee. But Alschuler said Aberdeen paid and has the cancelled check to prove it.

An NSI spokeswoman said her company was investigating Aberdeen's claim. "It looks like it was a combination of errors — an initial one from them and then others. But we don't have all the details yet," she said, but declined to elaborate.

Aberdeen officials were so enraged that the firm published a report titled "Network Solutions Dog Bites Aberdeen Group, Aberdeen Bites Back" documenting the ordeal. "In a nutshell, it was a very bad customer-service experience," Alschuler said. "And based on e-mail we've received since we wrote it, we believe that we are neither unique nor alone. At its root, we would suggest that maybe being a monopoly makes people a little complacent about these things."

NSI never acknowledged any wrongdoing, he added. However, the company did expedite the process of getting Aberdeen back online after Aberdeen paid an additional $35, Alschuler said.

Because Aberdeen doesn't conduct much business over the Internet, he said the incident was "problematic for us, but not cataclysmic."

Starting next month, NSI will be forced to share the domain name registry business with five competing firms. "We think that it's an appropriate move, and we can't wait for the changeover," Alschuler said. ◗

Execs Advise on Labor Crunch

Better ads, benefits and IT links to HR are keys to more successful recruiting

BY KIM S. NASH
CHICAGO

As the IT worker shortage continues, several companies successfully dealing with it came together here last week to offer advice and share fears at a conference held by Giga Information Group Inc.

More than 300,000 information technology jobs remain unfilled and 95,000 more are expected to come open every year until 2005, said Bart Bolton, an analyst at Giga in Norwell, Mass.

To get through the crunch, user companies need both short- and long-term plans, Bolton said, echoing sentiments from several IT and human resources professionals who spoke at the conference.

Creating better targeted and more lively job advertisements is one example of what companies can do right away, said Tom Vines, a human resources vice president dedicated to IT at Cigna Corp. in Philadelphia.

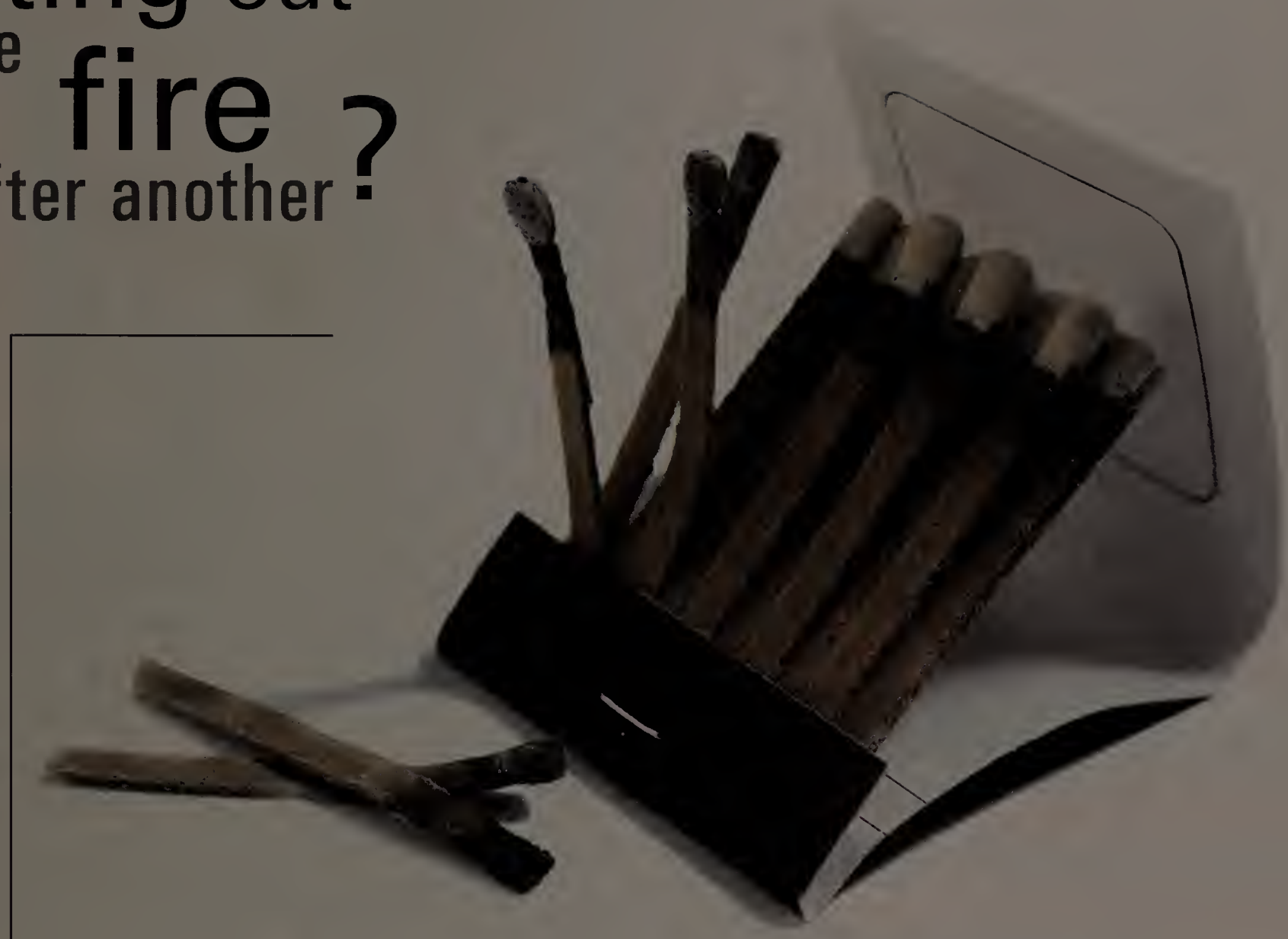
"Ours used to be very dry, as in, 'We have a need for a C++ programmer,'" Vines said. Now, Cigna emphasizes its favorable work/life balance and its awards as a top place to work.

Most crucial for the long-term is dedicating a human resources manager to the IT group and building a close relationship with the CIO, executives said.

Other tips included the following:

- Watch out for overuse of contractors. This can kill morale because contractors often freely talk about their high hourly rates. Several companies said they're working to cut down on the use of temporary staff but can't take action until year 2000 issues are solved.
- Recognize that training may be an antidote for dissatisfied IT staffers. Sears, Roebuck and Co. now mandates at least 10 days of training per year for its 1,700 IT workers.
- Cold cash still makes an impact. Duke Energy Corp. in Charlotte, N.C., for example, now gives annual bonuses to IT people based on meeting project goals. ◗

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UNWARY CIOs CAN WALK INTO BUSINESS DISASTERS

Ancient technology, sudden mergers and personal feuds can blindside new IT chiefs

BY BARB COLE-GOMOLSKI

When Ann Sullivan signed on to become the CIO at Maimonides Medical Center, she knew that a top priority was to move the hospital off its legacy systems and on to PeopleSoft Inc. applications.

What she didn't know was that there was a small army of punch-card machine operators in the basement of the Brooklyn, N.Y.-based medical center. "It was on my first day of work that I learned that we were basically back in the 1950s or 1960s" in terms of information technology, Sullivan said.

It isn't uncommon to experiencing some first-day-on-the-job culture shock. CIOs are often dealt big surprises after landing what appeared to be dream jobs.

Short Stays

Sometimes they walk into a business catastrophe, a political hornet's nest, a sudden merger or a mismatch with the corporate culture. A few stay anyway, but others head for the exits and are quickly added to the CIO-turnover statistics.

Of course, there's no way to insure against those career surprises, but experts say CIOs should do more research on the jobs they're walking into — not just the technology, but also the corporate culture, power structure and business climate.

In Sullivan's case, the hospital's executives didn't understand just how ancient their IT systems were, she said. What they did understand was that they had to commit one-third of their capital budget to technology. Today, the punch cards are gone, the PeopleSoft enterprise resource planning system is up and running and many of the hospital's business processes have been redesigned.

Sometimes the new CIO can be cruising along smoothly when — bang! — a business disaster strikes.

Chris Horrocks already had held high-level positions with several IT and management consulting firms when, in 1997, he became CIO of CFS Inc., a Tulsa, Okla.-based financial services company. The fast-growing company's IT department soon swelled from 30 to 270 people. "We changed all the operational systems and installed one of the largest data warehouses I've ever seen," Horrocks said.



BURLINGTON'S BRUCE FREEMAN: "What you are told in the interview may not be what you get"

But the successful company hit a major hurdle last fall, when an anonymous letter was sent to the major bond-rating agencies suggesting that improprieties within the business had occurred. CFS was forced into bankruptcy — even though the charges were never proven — and entered a severe downsizing mode.

"I had no desire to remain in such an atmosphere," said Horrocks, who is now president of the strategic applications division at SSDS, a systems integrator in Englewood, Colo.

Keith W. Hammer walked into one of the worst corporate feuds in recent history.

He left his job as an IT manager at Circuit City Stores Inc. to become CIO at Crown Books in Landover, Md., in the mid-1990s. He knew the Crown CEO from his Circuit City days and had been assured that a bitter battle between Crown's founder, Herbert Haft, and members of his family had ended. The feud started in 1993, when Haft family members began fighting to claim a share of the business.

"We thought it was over and done with and that we'd be able to go in a new direction," Hammer said. Not so. In fact, the problems proved to be "a huge drain on finances and a big distraction," he said. The family feud, which cost the company more than $40 million, wasn't settled until 1997.

Hammer is now CIO at Mars Music and Recording Superstores in Fort Lauderdale, Fla.

Another CIO, who spoke on the condition of anonymity, left the IT department of a large bank in favor of a midsize manufacturer three years ago. She said she wanted to escape "political backbiting and an environment where it took a year to get an approval" for a request for proposals from the bank's vendors.

The move was working out — until her company merged with a large competitor at the end of last year. "I was two years into a really great strategic plan, and now everything is on hold," she said. Even worse? "We had our act together in terms of Y2K, and now we don't," she said.

No Crystal Ball

There's no way to accurately predict mergers or changing business conditions. But CIO applicants can perform enough research to make an educated guess about a company that's merger bait or one that's headed for tough times in a slumping industry.

Also make sure you fit the corporate culture. For instance, most companies claim that IT is strategic, but some corporate cultures resist changing their business processes. Similarly, some companies value creativity and individuality while others prefer the status quo and a decision-by-committee style.

Unfortunately, "companies tend to hire people who are technically proficient and whose references check out," said Harvey Bass, president of Management Recruiters International in Sparta, N.J. Many companies don't conduct interviews or reference checks that could give them a sense of how the CIO will handle the position under pressure, Bass said.

For their part, CIO candidates tend to size up companies based on their technology, overlooking cultural issues.

That's dangerous, according to Dudley Brown, vice president of Bridgegate LLC, an executive recruiting firm in Irvine, Calif. "Sometimes, a company will spend millions of dollars installing a new system but has no plans to change its business processes," he said.

If you want to find out about a culture, "ask the CEO how decisions are made in the organization. That will tell you a lot about the political environment," said Cathy Bruno, CIO at Ohio State University Hospitals in Columbus. It's also important to size up the person you will be working for, said Dick Hudson, vice president of MIS at Global Marine Corp. in Houston. "Will he or she support you or micromanage you?" he asked.

One of the best ways to determine if you will fit in is to look at who has been successful at the company, paying special attention to their skills and personalities, Brown said.

> My first day of work . . . I learned that we were basically back in the 1950s or 1960s.
>
> ANN SULLIVAN, CIO, MAIMONIDES MEDICAL CENTER

When the culture fit is good, it can sustain a CIO through a business upheaval.

Bruce Freeman, now chief technology officer at Burlington Northern & Santa Fe Railroad Corp. in Fort Worth, Texas, was two years into his job as vice president of application development at Burlington Northern when it swallowed smaller Santa Fe.

"I had a golden parachute and considered taking the money and running," Freeman said. But he stayed. "I knew the organization and knew what kind of support I had," he explained. "If I'd left, all those things would have been unknown in my next job."

Freeman's advice? "What you are told in the interview may not be what you get when you arrive," he said.

How to Gauge the Corporate Culture

Some questions to consider when evaluating the corporate culture of a company:

- Does it view information technology as **STRATEGIC**?
- Is it a **HIGH-TECH** or low-tech organization?
- Is it a **KNOWLEDGE** working organization (in which most employees are paid to think) or a service organization (in which the bulk of employees do service jobs)?
- Is there an **ENTREPRENEURIAL** spirit, or is the firm security-driven?
- Does the organization encourage **COMPETITION** among employees and divisions?
- Does the company value **CREATIVITY**?
- Does the organization value **COLLABORATION**, or does it judge employees based on individual performance?
- Does the company have a commitment to a **WORK/LIFE BALANCE**, or does it expect people to work 70 hours per week?

SOURCE: MANCHESTER INC., JACKSONVILLE, FLA.

Food Manufacturers Weigh Prospect of Y2K Buying Binge

Planning for spike in demand not easy

BY KATHLEEN MELYMUKA

Although year 2000 freezes on hardware and software purchases may slow down business for information technology vendors, other companies expect a year 2000-related buying boomlet — especially after the Senate year 2000 committee last month recommended that consumers stock up on supplies in anticipation of problems.

But preparing for a spike in demand is a difficult balancing act. Food manufacturers can forecast demand in normal times, but they don't know quite what to expect late this year and early next year.

"If food manufacturers are going to ramp up, they have to figure out what people will want to buy," said Nancy Mitchell, year 2000 team senior business analyst at Pillsbury Co. in Minneapolis. "There's not a lot of good information about what consumers are going to do."

Oreo Shortage?

"They're saying people should buy extra supplies," said Tony Del Duca, year 2000 project manager at Nabisco Inc. in Parsippany, N.J. "Does that mean Oreos? Do we have to gear up production?"

Even if companies manage to predict consumer buying patterns, there are other things to consider before ramping up production. "We want to sell things we'll make money on, but they may want something else," Mitchell said. "The marketing challenge is to balance what the consumer wants with what's good for Pillsbury."

Because the change to year 2000 comes on the heels of the holiday baking season — the busiest time of year for Pillsbury — supplies will be at their lowest, and there won't be time to rebuild stocks.

The company will have to decide in the next few months whether to build up stocks in advance, Mitchell said.

If a food company does decide to ramp up production, the supply chain is a potential bottleneck. "Food is all pretty much commodity-based, and there's only a certain amount of commodity," Mitchell said.

In other words, no matter how badly people may want your goodies, when you're out of flour, you can't bake.

Finally, there's labor to consider. If Nabisco geared up for extra production, "we'd have to work out all the stuff with the labor union," Del Duca said. "There's a ripple effect: Once you decide on one thing, there are all these other things to consider."

MORETHIS ISSUE
For more coverage of year 2000 issues, **see page 41.**

INVEST IN WHAT YOU KNOW

Business-to-business e-commerce revenues are projected to reach $326 billion in 2002, up from $8 billion in 1997 – an increase of **over 3900%.**[1]

[Ever think what that could mean for you?]



FIDELITY SELECT TECHNOLOGY PORTFOLIOS	ONE YEAR	FIVE YEAR	TEN YEAR/LIFE
Business Services & Outsourcing	17.44%	N/A	31.71%[2]
Computers	85.59%	36.52%	29.89%
Developing Communications	76.49%	28.67%	25.98%[3]
Electronics	40.50%	34.90%	29.83%
Software & Computer Services	24.07%	27.64%	25.11%
Technology	70.11%	31.42%	27.55%

RETURNS AS OF 3/31/99. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.[4]



If you follow developments in technology and understand the industry's long-term potential — despite short-term volatility — you may want to consider using this knowledge to benefit your investment portfolio. How? By working with Fidelity Investments. Our industry analysts have demonstrated an ability to uncover technology stocks with great potential. Just keep in mind that stocks in a sector fund tend to move the same way and typically exhibit higher volatility than broadly diversified mutual funds. So if you understand the potential that lies in technology — work with Fidelity. To invest in what you know.

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[1]U.S. Dept. of Commerce "The Emerging Digital Economy," 1998 [2]Life of fund is as of inception date: 2/4/98. [3]Life of fund is as of inception date: 6/29/90. Average annual total returns include changes in share price, reinvestment of dividends and capital gains, and each fund's 3.00% sales charge and trading fee. Share price and return will vary and you may have a gain or loss when you sell your shares. All Select equity portfolios have a $7.50 exchange fee and a 0.75% short-term trading fee on shares held 29 days or less. On shares held 30 days or more, the trading fee is the lesser of $7.50 or 0.75%. Fidelity Distributors Corporation 75782


The explosion is seve

nteen minutes away.

A gasket is about



to blow. Now imagine. A chip in the engine alerts an electronic service that the driver signed up for when he bought the car. This service locates the nearest garage, books an appointment, provides directions to the driver, pushes his next business meeting back an hour and arranges for a rental car to meet him at the garage. But that's only the beginning. Meanwhile, the car manufacturer is notified of the gasket problem (it isn't the first time!) and while the auto giant considers retooling the line, the service drafts a recall notice and engages the help of a PR firm. Wow. A lot is happening here.

Car, gas station, rental-car company, auto giant are all seamlessly linked to the Internet. Not as a collection of websites or in a battle for eyeballs. But as a catalyst for the service-based economy. The next chapter of the Internet is about to be written. And it will have nothing to do with you working the Web. Instead, the Internet will work for you. www.hp.com/e-services

The next E. E-services.

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BRIEFS

Symantec Taps IBM Exec as CEO

Symantec Corp. named longtime IBM executive John W. Thompson as the company's new president and CEO last week. Thompson replaces Gordon Eubanks, who in January moved from the CEO and president slot into the role of company chairman. Earlier this month, Eubanks announced his plans to leave Symantec and take over as chief executive of Oblix Inc., a software start-up in Mountain View, Calif. [CW, April 12].

Online Merchants Try Free Shipping

Cyberian Outpost Inc., a Kent, Conn.-based online computer equipment vendor, last week eliminated all overnight shipping charges for its customers.

Onsale Inc., an online clearance center in Menlo Park, Calif., followed suit by offering free ground shipping.

Earnings From Intel, AMD, Apple, Lucent

INTEL CORP. last week reported first-quarter earnings of $2 billion, or 57 cents per share, on revenue of $7.1 billion, a 58% increase compared with the company's earnings a year ago. The increase was slightly more than what Wall Street analysts had predicted.

Competitor ADVANCED MICRO DEVICES INC. in Sunnyvale, Calif., posted a loss of $128.4 million, or 88 cents per share, in its first quarter. AMD officials blamed slower K6-2 processor sales, which they said are now rebounding.

APPLE COMPUTER INC. has reported a higher-than-expected second-quarter profit of $135 million, or 84 cents per share, compared with $55 million and 38 cents per share a year earlier. Revenue was $1.53 billion, up 9% from a year ago, and Macintosh sales rose 27%.

LUCENT TECHNOLOGIES INC., based in Murray Hill, N.J., last week said it expects second-quarter earnings to be in line with analysts' expectations of 15 cents per share. The company will announce actual results this week.

CISCO MAKES BID FOR IP-BASED CALL CENTERS

Planned $2 billion buyout of GeoTel to provide key products, critical capabilities

BY BOB WALLACE

CISCO SYSTEMS INC. last week announced plans to buy call center software maker GeoTel Communications Corp. for $2 billion in an effort to offer users more options for handling customers.

Today, most consumers usually dial a toll-free number to reach a call center, but Cisco hopes in the future they'll be able to contact call centers over the Internet or by calling a gateway at the company's corporate network.

Such services will require carriers to continue moving to packet-based IP networks. That's why Cisco recently shelled out almost a half-billion dollars on two start-ups that make products designed to help carriers do that.

Third-party companies will be able to develop voice, data and video applications for the platforms, which Cisco will be offering as an alternative to the proprietary private branch exchange and automatic call distributor switches now used to distribute calls at call centers.

"Some companies will want to move to an IP approach because they'll save money and won't be tied to proprietary hardware that's difficult to upgrade," said Robert Mirani, an analyst at The Yankee Group, a Boston-based consultancy. "But one big obstacle is that call centers are considered mission-critical — and are being served by switches well today."

That situation suits Cisco and Lowell, Mass.-based GeoTel just fine for now because the latter makes Windows NT-based software that works with the top carriers' networks as well as top call center switch vendors' products. GeoTel's Intelligent Call Router packages route incoming calls to the most readily available customer service agent at any of a company's call centers.

Carriers transitioning to IP will need the advanced call-routing technology in GeoTel's software to bring newer IP networks up to feature-parity with today's circuit-switched carrier networks, said Lisa Pierce, an analyst at Giga Information Group Inc. in Cambridge, Mass.

"Until the networks are equivalent featurewise, users will just hammer on their carriers for better 800 service rates," Pierce said. "They're just interested in pricing, quality and availability."

Cisco also cited the ability to support call center agents at home via the Net and teleweb technology, which allows users on a Web site to click a phone icon and be linked to a call center agent, as an area of interest. ▶

AT A GLANCE

GeoTel

Cisco's planned purchase price: About $2B in stock

Products: Call routing software for call centers

Markets: Large corporations and carriers

Headquarters: Lowell, Mass.

Founded: 1993

Employees: 310

CEO: John Thibault

Future: Would become division of Cisco Systems

SOURCE: GEOTEL COMMUNICATIONS CORP., LOWELL, MASS

Inprise Gets New CEO

BY DAVID ORENSTEIN

Two weeks after former CEO Del Yocam's departure [CW, April 12], Inprise Corp. sought to right itself last week.

It appointed a new CEO: Dale Fuller, the former CEO of the Internet site WhoWhere Inc. Fuller previously ran the mobile computing division at Apple Computer Inc.

Also, the Scotts Valley, Calif.-based development tools provider hired San Francisco financial adviser Hambrecht & Quist LLC to advise it about its options, which include finding a buyer or splitting its tools and enterprise divisions into separate companies.

Best Tack?

Inprise's best bet may be to split off its tools division and find a buyer for the enterprise side, said Larry Perlstein, an analyst at Gartner Group Inc. in San Jose. Analysts have said Inprise's suitors include Oracle Corp. and Sun Microsystems Inc.

Fuller will start his term at Inprise on financially shaky ground. The company last week warned investors that it will report a loss of more than 50 cents per share during the first three months of the year instead of breaking even as had been expected. ▶

Compaq's Enterprise Computing Campaign

Out to set itself apart from the pack

Compaq Computer Corp. last week launched its most aggressive push ever into enterprise computing with the NonStop ebusiness Solutions initiative, which is based on the assumption that Internet computing doesn't tolerate any downtime.

Senior Vice President **John Rose** is charged with driving this assault on the enterprise. Rose recently spoke with *Computerworld* editor in chief Paul Gillin and staff writer Matt Hamblen.



JOHN ROSE says the company is more partner-oriented

Q: Your enterprise focus sounds similar to IBM's and Hewlett-Packard Co.'s. What's different?

A: The nonstop piece is a clear difference. We are going to be driving nonstop computing toward volume platforms. We are also more partner-oriented. All our software business is managed only through partnerships. IBM wants to sell you its own software.

Q: What progress are you making in integrating the field forces from Digital and Tandem?

A: We have one Compaq field force. The account executive is the single face to the customer. The [account executive] is a generalist, but behind the lines is a series of specialists in different products and industries.

For example, we have storage experts who can sell just as well as an EMC [Corp.] specialist would. There are both horizontal and vertical specialists, too.

Q: What verticals are targeted?

A: Compaq began developing expertise in communications and financial verticals three years ago. Both DEC and Tandem fit that model nicely. We also have a focus on manufacturing and the public sector.

Q: A top Compaq executive said Compaq already has Windows NT at 99.99% availability. How much more reliable does it have to get?

A: That kind of NT is one with a special environment wrapped around it. But it's not a pervasive platform yet. Our goal is to make [high-availability] NT pervasive. Working with Microsoft, we'll be looking at 99.99% and 99.999% availability. And that will become part of NT. [Compaq's added value will be that] we're raising the bar and [that] we're focused on server capacity. ▶

PAUL GILLIN

Compaq off track

IF I HAD TO LIST the five computer companies I admire the most, Compaq Computer would make the cut. Here's a company that seems to stare extinction in the face every five to seven years and yet methodically finds a way to reinvent itself. Last week, Compaq had the unenviable task of stepping before several thousand of its largest customers, acknowledging that last quarter's earnings had been dreadful and then sketching out a vision for an Internet-enabled future. In my view, it fell short of the task (see story in News).



PAUL GILLIN is editor in chief of *Computerworld*. You can contact him at **paul_gillin@computerworld.com.**

It's too early to tell whether Compaq's new NonStop eBusiness Solutions strategy will resonate with its customers. Compaq is the last major computer company to define an Internet strategy. Its assumption that it can differentiate its products based upon reliability is questionable.

What concerned me more was the company's muddy response to its channel problem. With Dell threatening Compaq's leadership in nearly every measure of desktop market share, Compaq's response was what it called "customer choice," basically a commitment to sell through every channel possible. That's an expensive strategy in a market in which margins are only going to get thinner. At the very least, it requires outstanding back-end accounting systems to track customer purchases and discounts across multiple sales sources.

On top of that, Compaq aims to become a leading online shopping vendor by leveraging its AltaVista search engine and recently acquired Shopping.com retail site. That's senseless. Compaq has neither the expertise nor the brand recognition to be successful at selling barbecues and cosmetics online. The company says it plans to spin off the online businesses some time this year. But why wait? The market is as hot as it's going to get, and AltaVista presents a management diversion at a time when Compaq needs to refocus.

Focus is what Compaq lacks. It has the huge and ongoing task of integrating Digital's and Tandem's people and systems. It has committed to an expensive distribution model and a distracting commerce initiative, while direct vendors pressure it relentlessly on margins. Compaq needs to reinvent itself again — but this isn't the way to do it. ◗



ALLAN E. ALTER

An open letter to a Yugoslav professor

DEAR PROFESSOR X:

Will they arrest you if I mention your name?

You are the professor from Belgrade who wrote a letter to me just a few weeks before the war began. Remember? You had asked me about a story I helped write five years ago on demonstrating the value of information technology. The crisis was building, but it was no big deal. I copied the article, threw in some others, stuffed them in a big envelope with the *Computerworld* logo and mailed it to you.



ALLAN E. ALTER is *Computerworld*'s department editor for managing. Contact him at **allan_alter@computerworld.com.**

My package must have got to you just as the NATO bombing and the mass deportations began. Now I'm wondering: What's happened to you? And just who, exactly, are you?

Did this package from America get you in trouble with Slobodan Milosevic's police? Did a NATO missile kill you?

Are we colleagues in the field of IT? Or are we enemies now? Are you one of those Serbs wearing a "NATO target" bull's-eye on your coat? Are you among the Serbs spamming Americans or hacking NATO's Web site? Whom do you despise as murderers — Milosevic or us Americans?

What do we have in common now?

In front of me, on my computer screen, I'm looking at the Kosovo headlines on CNN.com. Are you? Can you? Are you ignorant of what's been done to the Kosovar Albanians? Or an apologist for mass deportation and worse?

Behind me, my bookshelf is crammed with titles like *Net Future*, *Blueprint to the Digital Economy* and *What Will Be?* Are they on your bookshelf, too? Do they mock you the way they mock me?

The books contain shining accounts of the glorious new interconnected world. Right now, their language feels as stale as one of Stalin's speeches. I'm not feeling so globally interconnected these days. Are you?

Professor, I've studied history, and it's not hard for me to connect war in Europe and the potential of IT: War and technology are old intimates. I'm not one of those startled futurists who ask, "How could this happen in 1999?" or are shocked to think of Milosevic and the Internet Age as contemporaries.

Why should the Internet, any more than the telegraph or television, be automatically capable of bridging two cultures? Some say information technology is inherently a carrier of democratic values, but I think the phrase "garbage in, garbage out" gets it right. The Internet is no more ethical or freedom-loving than a shovel that buries children and gunmen alike.

It wouldn't surprise me if, despite our professional interests, we have nothing in common. I can only hope we do. And that you can safely ask an American editor for old articles. And that I'll go back, despite my doubts, to sending them to you.

DAVID MOSCHELLA

Electronic books poised to become a key medium

HOW MANY TIMES have you been on the road and wished you had one of your books with you? Whether for work or for fun, you might want to revisit something from an old college text, reread a passage from a favorite author or look up something in a technical reference source. Similarly, in our ever-changing Internet environment, wouldn't it be nice to know that books covering time-sensitive subjects will be regularly updated to reflect recent industry developments?

Without doubt, the least-available type of text on the Web today is that from books. We can get just about any newspaper or magazine online, but the contents of millions of printed books remain scarce.



DAVID MOSCHELLA is an author, independent consultant and weekly columnist for *Computerworld*. Contact him at **dmoschella@earthlink.net.**

Online books currently consist mostly of works whose copyrights have expired or those used to launch hardware devices such as NuvoMedia's Rocket eBook and Librius' upcoming Millennium E-Reader. Although those hardware products will eventually be important (especially to children now required to schlepp backpacks of books to school each day), the real revolution is much more one of delivery than devices.

Just as MP3 has grown from an obscure audio-compression format to become one of the hottest topics in the music industry, so are electronic books about to shake up the traditional book publishing business. Indeed, e-books will change book publishing much more than e-retailing. While Amazon.com does a great job using the Web to sell existing books, the emerging e-book business will create whole new markets for book content — and eventually expand our very idea of what a book is.

Many of the advantages of e-books are similar to those in other Web businesses. Because there's no physical inventory, store capacity is effectively infinite; e-books can be printed or downloaded on demand and thus are never out of stock; and electronic reader-reader and reader-author interaction is enabled. In addition, e-books will let us access a single chapter or even a single page, while the ability to provide regular updates will enable an ongoing relationship with the reader, especially in many nonfiction subjects. Because of copyright expiration rules, many texts more than 50 years old could eventually be distributed for free.

Perhaps most important, and as with MP3, the benefits of e-books to authors are highly compelling: much greater control over your own content and marketing, complete copyright ownership and a bigger piece of the financial pie. Today, authors usually receive less than 10% of book-sales revenue, with the rest split roughly evenly between the bookseller and the publisher. It's entirely possible that an author might make more money on an e-book selling for $5 than a paper book selling for $30.

Just as the entertainment industry was slow to appreciate how important MP3 would become, today's major paper-book publishers are mostly watching from the sidelines. The e-book business is led by newcomers such as Xlibris.com to Excel.com and Books On-line. These companies are exploring new business models, the benefits of printing books on demand and the various forms of e-book delivery. Today, they all lack name recognition and clout. But it's easy to imagine them being suddenly thrust onto center stage via an acquisition from an Amazon, Yahoo or a similar big name.

Because of their many current advantages — such as familiarity, resolution, portability, disposability — paper books will clearly be with us for decades to come.

But eventually e-books will dominate, and they'll be with you wherever you go.

READERS' LETTERS

Government defends entry-level salaries

I READ THE ARTICLE "Uncle Sam Seeks Fix For IT Labor Crisis" by Patrick Thibodeau in your March 22 issue. I disagree with the statement, "The best the government can offer . . . is . . . $35,000."

I work at SPAWAR Systems Center in San Diego, a Department of the Navy research laboratory. Our entry salary for a graduate with a bachelor of science degree in engineering or a computer science degree and a 3.0 GPA is $40,800 plus a $6,120 hiring bonus.

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Bargain PCs have their advantages

THE ARTICLE "Bogus Bargain Boxes?" [CW, Feb. 8] covered both sides of the issue. For what it's worth, I have always been an advocate of what I like to call "true-blue clone" PCs.

Though it is true that many brand-name PCs perform better than a clone PC of equal components, my preferences are for PCs that feature maximum compatibility and minimum repair time.

I challenge the notion that brand-name PCs offer maximum compatibility. Many brand-name PCs have a unique BIOS to drive the unique hardware developed for a brand-name PC.

Even though a BIOS is usually easily flashed, troubleshooting a computer problem caused by a proprietary BIOS can be a very difficult proposition.

On the other hand, a BIOS developed for a clone PC seems to be geared toward maximum compatibility for all kinds of hardware and peripherals.

As far as minimum repair time, I laugh at the concept of "next-day, on-site service." With a true-blue clone, if something breaks, there are five stores I can go to in town that can sell me any part I need to have a broken machine up and running again in two to four hours.

I wonder if some people who use clones blame a crash on the PC a clone in a knee-jerk reaction. Having that philosophy obviates the need for that person to have an intimate familiarity with the operating system on that PC, which in 99 times out of 100 is the true culprit.

Jack Alberts
Network administrator
American Bank
Waco, Texas
loanbank@loanbank.com

Train, pay our own to solve skills shortage

RECENT *Computerworld* articles have reported the effects of the IT shortage in the U.S.

I think the solution is training more of our own people. People with midrange skills could be sent to total immersion seminars to learn new skills, releasing senior professionals to yet higher-level tasks.

And raising salaries might help attract and retain people. Often the preferred method is to import labor from the Third World, increasing the supply and reducing the demand.

Stockholders may soon realize that the bloated salaries of corporate executives are similarly symptomatic of a "shortage of trained talent." Surely India, Russia and China have plenty of managers who could run our corporations for a fraction of the salaries now paid. If those countries can train systems analysts and engineers, I'm sure their management schools are also top-notch.

Terry Duke
El Paso, Texas
tduke@miners.utep.edu

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 875-8931; Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

> The next generation clearly leverages both the intranet and Internet as central resources for knowledge. If knowledge is a corporate asset in your organization, Office 2000 could be a very useful tool for creating and managing it... Custom installation is drastically different and much improved...I loved the install-on-demand feature.
>
> **—Andre Kvitka, *InfoWorld*, 8/10/98**

> Microsoft's Office 2000 is more like a platform than a suite of productivity applications. Organizations can choose to integrate third-party applications or customize the platform to suit their own applications and environments. Building on the Office 2000 platform can dramatically improve the overall desktop application management problem for IT.
>
> **—Amy D. Wohl, *Wohl Associates, Inc.*, 3/19/99**

> The next generation of Microsoft's desktop productivity suite goes beyond the desktop, linking workgroups together with Web-based technology—potentially making teamware and low-end groupware products obsolete.
>
> **—Steve Gilmor and Jeff Angus, *Information Week*, 8/10/98**

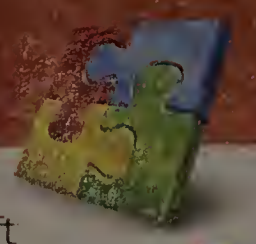
> Office 2000 exhibits tighter integration with the Internet, better collaboration tools, and easier installation and migration features than any other office application suite *PC Week Labs* has tested... IT managers will find a lot to like in Microsoft's next release of its office application suite, including the great strides made in features that handle deployment.
>
> **—Herb Bethoney, *PC Week Labs*, 8/10/98**

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Don't wait to see how your organization can benefit. Visit www.microsoft.com/office/2000deploy



Microsoft Office 2000
What Productivity Means Today

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Unisys delivers solutions based on a broad portfolio of global information services, along with enterprise-class servers, associated middleware, software, and storage.

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JOHN GANTZ

Why Melissa was good for IT

MELISSA, sweet "Melissa," as the Allman Brothers song goes. What a wonderful virus! It came and went and hit the front pages and TV news stories. For the IT profession, it did 10 times more good than harm.

I'll tell you why.

For two decades, I've been watching the IT market and listening to security mavens call for more caution, more rigor and more money to be spent securing our IT resources. And for two decades, my company's surveys have shown a truly amazing lack of interest on the part of business managers. Until the Internet and the intrigue of tracking down cyberpunks came along, IT security had to be the most boring topic known to man.



JOHN GANTZ is a senior vice president at International Data Corp. in Framingham, Mass. Contact him at **jgantz@idcresearch.com.**

Now, thanks to Melissa and other widely publicized security breaches, there's new life in the market. It helps that electronic commerce is also in the front-page news. So now we finally have top management's attention. How should we proceed?

Probably by getting help. Thanks to electronic commerce and other network mission-critical apps, companies will spend about three times as much on services consulting in two years as they did two years ago. According to my colleague Rich Brewer, who studies the market for IT security services, services on the market today generally fall into three main categories:

- Security operations services center on the installation and operation of firewalls, encryption services and intrusion detection.
- Security implementation services install, configure and test hardware and software.
- Security consulting services provide policy review, ethical hacking services, encryption consulting and computer forensics.

For many of you, the place to start may be a policy review. According to Brewer, a lot of companies don't even *have* policies about employee use of IT resources — a first step in prevention of internal threats. You can't prosecute someone for violating the rules if you don't have rules.

After that, it's the details of implementation — what and how to encrypt, which firewalls to get, how to handle tunneling. And don't forget physical security and employee monitoring. A lot more IT resources are destroyed by disgruntled employees with hammers and guns than by hackers.

The place to end, though, may be with hacker insurance, which entered the limelight last year when Cigna Property and Casualty Insurance began offering its Secure Systems Insurance Program. The insurance covers data theft, data damage and business interruption. A midsize company might pay $20,000 to $25,000 per year in premiums on a policy with a $1,000 deductible and $25 million limit per incident. But the insurance comes only after testing, assessment and certification by Cigna partners Cisco and NetSolve. Think of this as getting a physical before getting life insurance.

There's no one-size-fits-all security solution, as Brewer points out. The Automotive Network Exchange, an electronic-commerce automakers consortium, had to get encryption services from one vendor, secure routers from another, consulting from a third and hacker protection from a fourth.

However you do it, now is the time to start planning and proselytizing — while Melissa is fresh in everyone's mind, the economy is good, and year 2000 hasn't yet turned the land dark. ◗

JOSEPH E. MAGLITTA

Cyberterrorism is a serious threat

COMPANIES with IT plates still laden with year 2000 work need to swallow hard and make room for an even more unpalatable next course: protecting against cyberattacks.

Recent events underscore the seriousness of chronic, low-grade military, criminal, industrial and terrorist threats to vital U.S. infrastructure — including defense, energy, water, transportation, health care and communications — and possible deadly impact on U.S. business.



JOSEPH E. MAGLITTA is *Computerworld*'s industry editor. Contact him at **joe_maglitta@computerworld.com.**

In the past few weeks:

- Congress allocated $1.4 billion to combat information terrorism.
- A Taiwan-born scientist was fired for allegedly stealing nuclear secrets from a U.S. Energy Department computer for mainland China.
- A National Resource Council study said key U.S. military computers are dangerously vulnerable to attack.
- The Melissa virus choked e-mail systems.
- AT&T's @Home Network and a NATO Web site were hacked.
- House Armed Services Committee member Curt Weldon (R-Pa.) warned of "an electronic Pearl Harbor." Conflicts in Serbia and Iraq make it harder to dismiss such fears as Chicken Little politics.

Incredibly, after years of increasingly urgent warnings, the underfunded approach to security at many public and private organizations remains "comply, get by, deny, lie, cry."

That's very bad news. Any credible national cyberdefense surely will hinge on an uncomfortable new coalition of IT, business, government, the military, law enforcement, academia and citizen groups working with various professional, security, privacy and special-interest groups — all collaborating on a scale unseen since World War II.

But a strong cyberdefense (to the extent that it's possible) requires more than simply training more people or compiling a national registry of security experts, as some bureaucrats have naively suggested. The following is just for starters:

End of denial. Despite the challenges of running a computerized business without lights, heat, air conditioning, electricity, flush toilets, telephones or healthy employees, most IT shops regard the infrastructure as someone else's problem, if they regard it at all. Apparently, year 2000 hasn't convinced everyone that we are indeed our brothers' keepers in the electronic-business era.

Universal participation. Excellent as they are, the Coordinated Emergency Response Team, National Security Agency and other hacker-whackers can't single-handedly create cybersecurity. A strong national defense will demand ongoing commitment of people, time and money by ordinary IT departments and companies. If this is war, do we need a draft?

Clear incentives. In the networked economy, tight security can be a powerful competitive edge. Why then should, say, American Express share its know-how with the rest of the world, including rivals? Study needs to be given to tax breaks and other incentives needed to motivate business.

Enlistment of teen hackers. In cybersecurity, no one knows you're a kid. If that's truly a pivotal matter of national security, the cleverest youth ("The Best and Byte-est"?) must be recruited for key roles. Give them scholarships, bonuses, computers, cool uniforms, jobs at Disney — whatever.

Amnesty. Any strengthening against cyberattack requires corporate, industry and national forums where sensitive issues can be discussed without fear of spooking investors or luring lawyers.

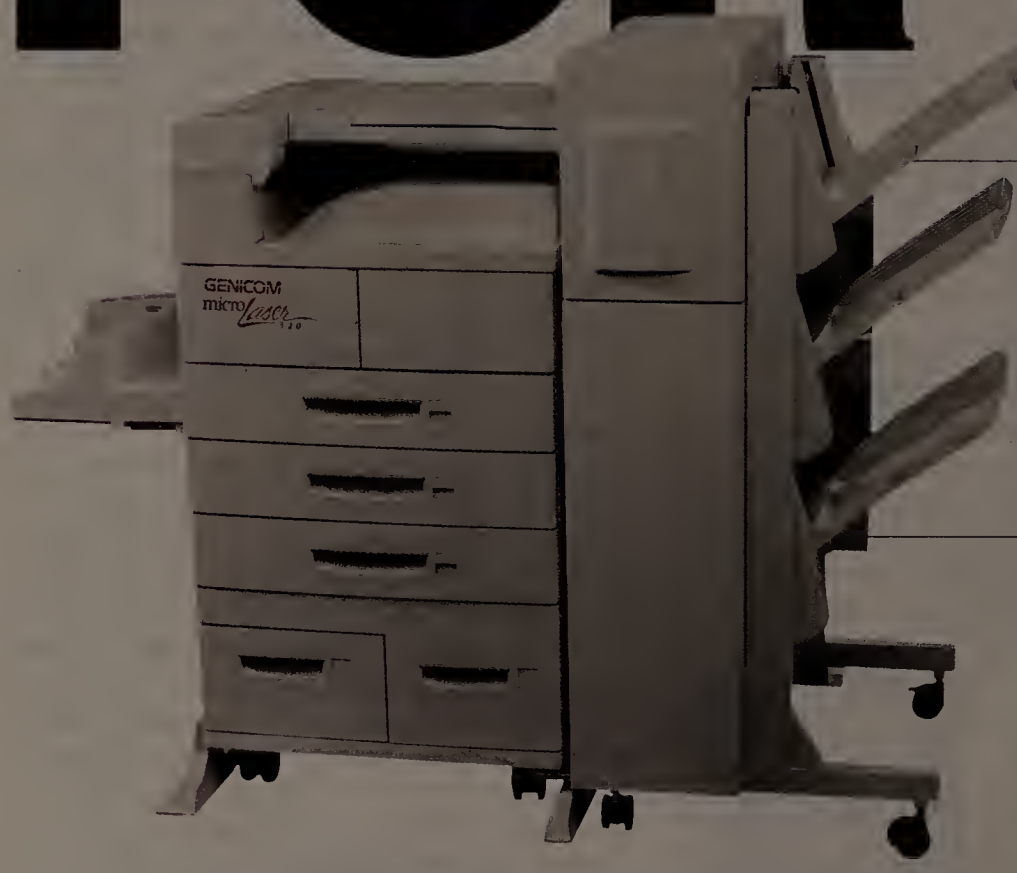
Better background checks. As the son of an Italian-American grilled by the FBI before he could work at nuclear-bomb facilities during World War II, I never thought I'd say this. But recent reports of foreign espionage and the huge number of non-U.S. nationals engaged in year 2000 remediation demand better employment screening.

Speed. The lead-footed federal response that delivered year 2000 funding in 1999 will prove deadly here. Cyberwarfare is more like a Nintendo game than a session of Congress. Business must lead.

More disasters. Melissa should have been a wake-up slap for those in dangerous denial about cyberattacks. History suggests otherwise. IT can sound the siren — How about bumper stickers that say: "If you think cybersecurity is expensive, try getting hacked"? But company boards and heads must be sufficiently scared — and clear about their self-interest — before security becomes a priority. ◗

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BUSINESS

SURVIVING MERGERS

How do you survive a merger with your job intact? First, be flexible about the role you want to play in the merged organization, then communicate your skills to the people who will write your job description. ▸ 54

WHY WE FAIL

IT managers are misled by "management folklore" into following outmoded management practices that just don't work, says Tom DeMarco. Here, he lays out the ideas in the second edition of *Peopleware*, the advice book by him and Tim Lister. ▸ 60

E-DELIVERY

FedEx and UPS are fighting tooth and nail for deals with big Web sites. Their strategies differ, but their goal is the same: Each wants to be the one paid to deliver all those millions of items sold online. ▸ 38

AGE-SPECIFIC SALES

Insurance companies are mining lifetimes of customer data to help develop age-specific products. Wouldn't a nice car insurance offer be great when the kid finally turns 16? Existing customers are easy upselling sales targets. ▸ 42

DAMNED LIES

Your Y2K project is "substantially complete?" Sure. Ed Yourdon hears people lying through their teeth about how ready they are and thinks it's only going to get worse. What does the auditor say about how ready you are? ▸ 49

RAGING USERS

Users attack the people most dedicated to their welfare — the help desk staff. Here's some advice from the survivors on how to turn a tough situation to your advantage. ▸ 62

ETERNAL ERP

Think that two-year ERP rollout is finished? Nope. Once users get used to systems, they ask for lots of changes, so IT teams must repeatedly adapt the software to the business, and vice versa. ▸ 43

YEAR 2000 CHARITY WORK

IT people are volunteering to help local governments and other groups with potential year 2000 problems. But the best way for others to help might be giving local organizations an idea of what to expect. ▸ 41

CAN WE SAY THAT?

As Jargon Judge, Anne McCrory considers whether to show "portal" the door. But first, she has to figure out which kind you mean, exactly. ▸ 56

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STEPHEN SHEFFIELD

ARE YOU HAPPY WITH YOUR JOB?

Computerworld's Annual Job Satisfaction Survey shows that most IT people think they work too hard and make too little money. Most are happy in IT and are basically loyal to their companies. No surprises there. What is surprising is how little it would take for many of them to bail out of their current job. They're unhappy because managers don't appreciate how hard they work and how much they contribute.

50

FEDEX, UPS SEEK ONLINE SHIPPING MARKET SHARE

FedEx's deal with Netscape, UPS's tools position shippers for growing Web sales

BY CAROL SLIWA

FDX CORP., the parent company of Federal Express Corp., and United Parcel Service of America Inc. earlier this month laid out plans to make their shipping services easier for online businesses and consumers to access and use.

While neither is the clear leader in the Internet package delivery business, the moves could pressure competing shippers to take similar steps to make their services simple for online retailers to choose.

"The greater the competition between the two or three package delivery leaders, the greater the pressure will be on the post office and [other entities] to innovate as well," said Scott Smith, an analyst at Current Analysis Inc. in Sterling, Va.

"Longer term, both [FedEx and UPS] realize they will be playing a shifting role as the science of document delivery changes, and the Internet provides a platform for entirely new businesses for them if they remain relevant," Smith added.

> The Internet provides a platform for entirely new businesses for [FedEx and UPS] if they remain relevant.
>
> ANALYST SCOTT SMITH
> CURRENT ANALYSIS

FDX's multimillion-dollar, multiyear deal with Netscape Communications Corp. will make FedEx's delivery services prominent on Netscape's Netcenter portal site. It also will make the Memphis-based company the preselected carrier for any purchases made on the Netcenter General Store and Software Depot.

The agreement also calls for FedEx to license Netscape's Custom Netcenter service, which will allow FedEx to add personalization features on its Web site for customers.

Meanwhile, UPS last week unveiled OnLine Tools that businesses can use to integrate its shipping services into their online sites.

Like FedEx, the Atlanta-based express carrier and package delivery company has offered Net tools that let customers track a package, calculate costs and select services. But the new tools let businesses customize the look of pages to suit their needs and give customers added functionality.

New functionality includes tracking packages using the business's own internally generated reference number (rather than the UPS tracking number) and letting customers compare UPS rates for different levels of services. Other new features build in shipping and handling charges, show customers time-in-transit information, generate a color-coded map to display ground transit time, upload shipment manifest information to the UPS mainframes and catch discrepancies in city, state and ZIP code information.

Erica Rugullies, an analyst at Giga Information Group Inc. in Cambridge, Mass., said Web site builders should consider the costs and benefits of locking themselves into one shipping vendor.

"One of the things that sites have to look out for, if they lock themselves into one logistics vendor, they don't allow their customers the luxury of price comparison. They don't allow themselves that luxury either," Rugullies said.

Supporting Web Customers: Two Strategies

One company buys knowledge base; another 'rents' chat

BY JULIA KING AND MATT HAMBLEN

Two electronics companies. Two very different online customer service strategies.

Philips Consumer Electronics in Campbell, Calif., has cut customer support phone calls for its handheld computers by more than 30% with the help of a $200,000 Internet-based self-service knowledge base.

Online retailer I-800-Batteries in Lake Tahoe, Nev., has kept its Internet-based customer service costs to less than $20,000 by renting a service that lets it offer live operator support online.

Both report being satisfied with their method of choice, which company executives have found answers customers' calls efficiently.

At Philips, owners of its Nino 300 handhelds can ask questions online via a customized service knowledge database known as Web Advisor, from ServiceSoft Corp. in Needham, Mass.

A customer tries to resolve problems on his own with a set of frequently asked questions or responding to a set of inquiries. If he doesn't get a satisfactory result, an e-mail form is created and the complaint is automatically forwarded to Philips help desk officials, who can then contact the customer via phone or e-mail.

"This is a good solution for people who are astute and used to using the Web, which is our target market," said Deepak Gandhi, service program manager at Philips. The system answers more than 95% of users' questions satisfactorily, he added.

Live Chat

By contrast, I-800-Batteries service representatives interact with customers during live chat sessions conducted via FaceTime Communications Inc.'s message exchange service.



KEN HAWK says 1-800-Batteries customers can talk to operators without leaving the Web site

Customers initiate a chat session by pushing a button on the 1-800-Batteries Web site, into which FaceTime's messaging, routing and communications technology has been integrated. FaceTime handles all of the customer/agent Internet communications as part of a hosted service for which online users like I-800-Batteries pay $3,000 to $5,000 per month.

"Our customers needed a way to contact us without having to pick up the telephone while on our Web site," said Ken Hawk, an executive at 1-800-Batteries.

Renting services also significantly cut up-front costs, he said. Buying and installing hardware and software to obtain the same chat capabilities would have cost much more than the $20,000 start-up fee to sign up with FaceTime, Hawk said.

Previously, I-800-Batteries customers' only option was to send an e-mail and wait for a reply. Hawk said that often resulted in customers selecting items to buy but stopping short of actually executing payment because they still had unanswered questions about specific products in the company's line of laptops, telephones and other mobile gear.

"The services model works well for these companies [just starting out on the Web] because they can buy three-month subscriptions and try it out. The risk is a lot lower [than buying the capability]," said Allen Bonde, an analyst at Extraprise Group Inc., a Boston-based market research and consulting firm that specializes in Internet-based services.

MUSIC GIANTS TEAM UP



Strauss Zelnick, president and CEO of BMG Entertainment (left), and Edgar Bronfman Jr., president and CEO of Seagram Co., discuss their joint Internet music venture, GetMusic. The site will sell music and offer music-related content and online fan communities, competing with sites such as Amazon.com and CDnow.com. Included at getmusic.com are content channels, such as peeps.com, dedicated to hip-hop artists, and twangthis.com, a country-music site

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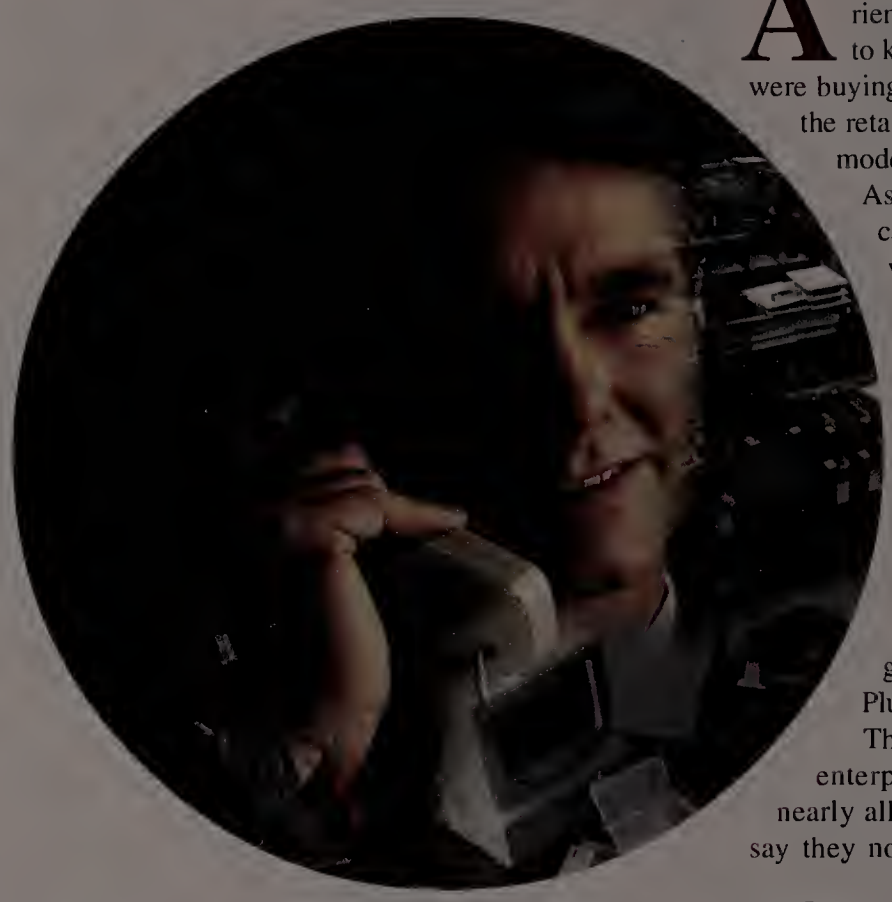
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A single face to the customer

ERP Plus software connects the front and back office to achieve customer satisfaction

Sidney Hill, Jr.
SJR Communications
Albuquerque, N.M.

All of us, as consumers, have had unfortunate experiences with a retailer whose left hand didn't seem to know what its right hand was doing. Whether we were buying a stove, refrigerator, or some other appliance, the retailer just couldn't get it together when it came to model number, delivery date, or service agreement. As a manager in a manufacturing enterprise, you can't be that chaotic with your customers. That's why it should be of interest that there is a new generation of business software systems that fully integrates customer management services with production planning, distribution, and financial applications.

More powerful than their predecessors, contemporary business applications come in sleeker packages with updated features that make it easier for their operators to negotiate any hazards that might impede their path to business success. Leading this new class of fully integrated business systems is a package called ERP Plus™ from Tampa, Fla.-based **PowerCerv Corp.** This system is the type of seamlessly integrated, enterprisewide business computing software that nearly all enterprise resources planning (ERP) vendors say they now offer, but that users find, when they look under the hood, very few suppliers actually deliver. "I really was surprised to find that PowerCerv was the only company whose system was truly integrated from end-to-end. I expected more vendors to have that type of integration," says Mike Dumas, MIS manager for **Automata International**, a printed wiring board manufacturer based in Sterling, Va., that recently selected ERP Plus as its enterprise computing platform following a search that began with a list of 20 ERP suppliers.

The type of integration Dumas speaks of blends strategic applications such as sales force automation and customer support—the so-called front-office systems—with the transaction-oriented systems that organize back-office operations like manufacturing, distribution, and financial management. Manufacturers increasingly covet this type of integration because it enhances their ability to continuously improve the one remaining area in which they still can gain a true competitive edge: customer service.

Information, not data

John Montague, PowerCerv's senior vice president of marketing, says ERP Plus facilitates the free exchange of not just data, but information, throughout an enterprise, thereby enabling manufacturers to show "one face to the customer." That means anyone within the enterprise who might speak with a customer—a field salesperson, the CEO, even a warehouse worker—enters the conversation armed with the same up-to-date information about all previous contacts that customer has had with the company.

Todd Ouellette, director of information systems with **Lorin Industries**, a manufacturer of coil aluminum products based in Muskegon, Mich., confirms that statement. "We are gaining market share over our key competitors," says Ouellette, whose company has been using the ERP Plus suite for more than a year. "Our customers have told us many times over the past 12 months that the reason our business is growing is because we are giving them more detailed, accurate, and up-to-date information than our competitors are capable of providing."

Scott Galloway, PowerCerv's vice president of ERP solutions, says ERP Plus gives companies a competitive edge simply by empowering their sales and customer-service representatives to make promises that the rest of the company can keep. "Everybody wants an ERP system to help them increase sales by making their customers happier," Galloway says. "The best way to make customers happy is to deliver on your promises, and the best way to do that is to set customers' expectations properly from the beginning."

A missed opportunity

Galloway notes that ERP systems historically have been good at calculating the cost and time associated with building specific products, but these systems generally have done a poor job of making that information available to anyone outside of the production and finance departments. Consequently, salespeople often are forced to give customers their best guess as to whether certain products can be delivered, because they don't have information on such things as material availability, capacity availability, or accurate pricing and configuration logic.

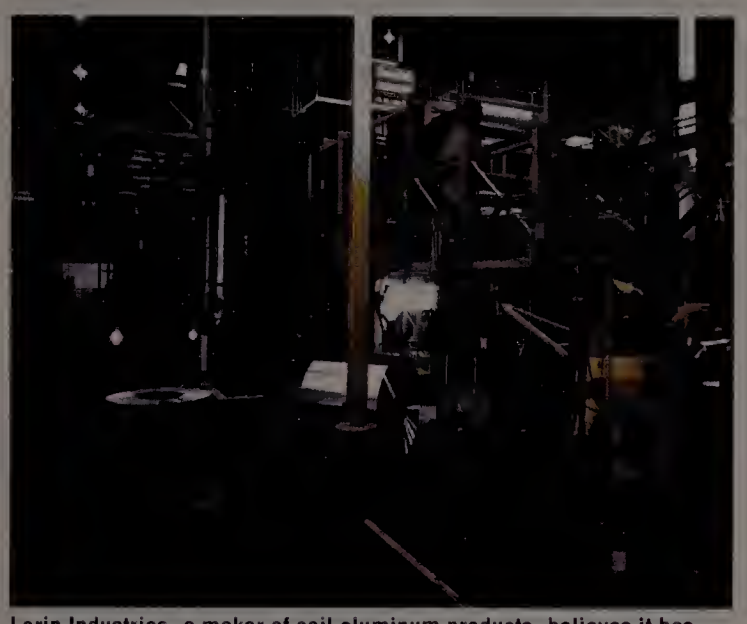
"As a group, ERP has missed a real opportunity by not providing this information to salespeople, so they could use it to set customers' expectations properly at the outset," Galloway says. "We have extended the reach of ERP to let salespeople talk truthfully to customers and prospects about product pricing, availability, delivery status, and even problem-tracking on the post-sale side.

"Providing that information has a big impact on an entire company, because everyone knows salespeople are setting customer expectations based on realistic information," Galloway continues. "That means the operations people are not confronted with constant schedule changes and they no longer find themselves frantically hurrying and scurrying to satisfy specific customers. The end result is everyone marching to the same beat in terms of keeping commitments to customers."

The ERP Plus suite consists of five major modules: Manufacturing, Distribution, Financials, Sales Force Automation, and Customer Support. The entire suite is composed of object-oriented components built on widely used, open technology. ERP Plus can run on the Windows NT or UNIX operating platforms, with either Microsoft's SQL Server or Sybase as a primary database. The system is completely Web-enabled and Year-2000-compliant. It also features a rules-based product configurator and an underlying workflow engine that can be used either as a basic communications tool or as a means of facilitating collaborative work processes. The latest version of the system, which was released this past November, contains an advanced planning & scheduling (APS) module, and a new executive information module called PowerCerv Intelligence that aids management efforts to continuously monitor and improve a company's overall performance.

Instant communication

Ouellette says ERP Plus will bolster Lorin's customer service efforts by facilitating instant communication between its sales staff and the rest of the company. "When our salespeople walk into a customer site, they will have, on their laptop computers, accurate information about that customer, as of the last time they were connected to the system," Ouellette explains. "And even while they are in the field, they will be able to connect remotely to the system and get up-to-the-minute information about any customer. The customer's shipments, invoices, payments, and more are listed in chronological order."



Lorin Industries, a maker of coil aluminum products, believes it has gained market share as a result of being able to provide detailed, up-to-date information taken from the ERP Plus software suite. (*Photo courtesy Lorin Industries*)

Lorin's salespeople also use the workflow engine to enter notes about specific support they will need to meet particular customers' needs and route that information to all of the appropriate people within the company. These notes often are accompanied by attached documents, including sales proposals that provide engineering and manufacturing personnel with the information they need to determine if a particular product can be built. Support people can send return messages detailing the specific actions they are taking on behalf of individual customers.



The ideal midrange solution

PowerCerv designed ERP Plus specifically for mid-sized manufacturers, primarily companies with up to $1-billion-a-year revenue range, or divisions of larger corporations that fit that profile. For many of these companies, ERP Plus represents the best information technology (IT) solution. The system's state-of-the-art client/server architecture allows them to distribute specific applications exactly as they are needed throughout an enterprise—even linking remote facilities and personnel to a central database. At the same time, its full end-to-end integration eliminates the need to purchase separate systems from a host of different vendors. That approach, commonly known as a best-of-breed strategy, was hailed as a panacea in the late 1980s and early 1990s for large companies whose aging, monolithic, mainframe-based systems were hindering their ability to adapt to fast-changing business conditions. However, few mid-sized enterprises can expend the necessary resources to support a best-of-breed approach.

"Two factors made us look at an integrated system instead of adopting best-of-breed: cost-of-installation and cost-of-ownership," says Richard Buckmaster, director of strategic projects for Dallas-based **Interphase**, a $70-million-a-year manufacturer of equipment for interfacing and controlling IT networks.

"If we had purchased separate systems to perform the same functions, the total cost would have been much higher than the PowerCerv suite. And supporting that many separate systems is complicated. Each system in a best-of-breed network needs its own resources. You need to have people trained on all those platforms. Then you have the issue of getting all those separate systems to talk to each other."

Keeping customers happy

Many mid-sized manufacturers are finding that some systems that claim to be integrated are too expensive, particularly systems that originally were built to run Fortune 1000 enterprises and now are being marketed as scaled-down, midrange solutions. Automata reviewed more than one such system before settling on ERP Plus, according to Sam Paisley, the company's CFO. "We concluded that



ERP Plus has bolstered Lorin Industries' customer-service efforts by facilitating communication between sales staff and the rest of the company. (*Photo courtesy Lorin Industries*)

Two applications, one look

APS solution adds greater value to ERP Plus

The advanced planning & scheduling (APS) system available with the latest version of its ERP Plus suite strengthens the value proposition that Tampa, Fla.-based **PowerCerv Corp.** offers mid-sized manufacturers: the ability to meet customer's expectations, while maintaining a single face to its customers.

APS software optimizes the use of in-house resources to ensure that all customer commitments are met at the lowest possible cost. Manufacturing professionals can make effective decisions while dealing with complex production constraints and an environment of continuous change. They can alter their mode of operation on-the-fly, in response to customer demands, as well as unforeseen circumstances such as machine downtime. An APS solution can help a manufacturer maintain its solid customer relationships and maximize its profit potential.

PowerCerv has partnered with **Taylor Manufacturing Systems**, Norcross, Ga., for its APS solution. Taylor is an industry leader in APS solutions with its multi-user, Window's-based TESS® software package, known for its real-time scheduling and planning capabilities in complex manufacturing environments.

Ursula Hess, president of Taylor, says TESS is designed primarily to optimize the planning and scheduling of plant resources—machines, materials, and labor—so companies can do the best possible job of executing short-term production schedules. "TESS is used by manufacturers of varying size, including some very large ones," she says. "Our alliance with PowerCerv allows us to bring our APS solutions to mid-sized manufacturers, whose planning and scheduling challenges can be no less complex than larger companies." She notes that manufacturers routinely see dramatic improvement in on-time delivery rates immediately after deploying the TESS system, combined with cost savings in production, which obviously wins favor with their customers.

John Montague, senior vice president of marketing for PowerCerv, says the company struck an alliance with Taylor after it conducted a thorough evaluation of many APS products on the market. PowerCerv selected TESS for its depth of functionality offered on an open, client/ server system that is easy to integrate with its ERP Plus software suite. One of the primary reasons for going with Tess is the ability that TESS provides to integrate with ERP Plus and help their mutual customers present a single face to their customers. The integration between the PowerCerv ERP Plus system and Taylor's TESS software was completed this past November, and eliminates the need for the customer to connect the two systems. Hess agrees that TESS will heartily support PowerCerv's goal and there are clear reasons why. First, says Hess, the TESS APS system will generate realistic



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E-mail:_____ **Send Free CD ROM demo?** ❒ Yes ❒ No

Company or Division Size: ❒ <$25M ❒ $25M-$50M ❒ $50M-$100M
❒ $100M-$250M ❒ $250M-$500M ❒ $500M+

Business Plan:
We plan to purchase ERP software within the next
❒ 3 to 6 months ❒ 6 to 12 months ❒ 12 to 18 months

Number of Plant Locations: ❒ 1 ❒ 1-3 ❒ 3+



We recognize a need to integrate our sales force with an ERP system? ❒ Yes ❒ No

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the amount of effort required to make those systems operational, including bringing in external consultants, eliminated them as an option for us," says Paisley, who believes ERP Plus will support all of Automata's key business goals at a reasonable cost.

Automata is a mid-sized manufacturer of printed wiring boards for many well-known computer and networking hardware manufacturers. Paisley says that Automata is experiencing rapid growth, but sustaining that growth will require maintaining strong customer relationships.

For Automata, that means staying abreast of customers' plans for building computing platforms, designing and manufacturing the right boards for those platforms, and ultimately being able to deliver large numbers of those boards, often on short notice. Paisley says Automata routinely is required to deliver orders within three to five days after they are placed.

"Maintaining long-term relationships with our customers has been critical to our success," Paisley says. "In looking for a new system, we wanted a sales force automation platform for managing customer contacts, but we also needed the end-to-end integration for customer support. We were seeking the type of integration that would allow us to take data generated as part of a sales quote and convert it into a schedule for building the requested products. We expected to use that same information to control the shop floor during production, to help execute the shipment of finished products, and provide post-sale customer support after products are delivered."

Mike Dumas, MIS manager for Automata, says ERP Plus will make Automata more efficient in every area, from sales quoting to management reporting, and he is confident that the system can be fully operational in less than six months.



CTI, a manufacturer of medical scanning equipment, uses Lotus Notes in conjunction with ERP Plus so that occasional users of ERP data have access to the system. (*Photo courtesy CTI*)

"Right now, we have multiple systems that don't communicate," Dumas says. "Our sales quoting process is extremely cumbersome, with sales reps bouncing back and forth between systems. They have to exit the MRP system, use Microsoft Excel to track pricing data, and Microsoft Word to produce the actual quote. With PowerCerv, they will be able to generate quotes completely on-line—including using the product configurator for pricing—and convert the quote into a sales order, all in the same package."

Dumas says Paisley and other Automata executives also will find ERP Plus much easier to use than Automata's current system, which will free the MIS staff from having to generate management reports. "Our current system has no report writer," he says. "Often when management wants a new report, we have to write a C program to create it. PowerCerv has a Windows-based report writer that makes things a lot easier, but it also has easy drill-down capabilities that will allow most managers to find the information they need without having to create a report."

A logical flow

The ERP Plus suite is designed to support the typical flow of business transactions, with the sales force automation and customer-support modules serving as gateways to the rest of the system. Montague says this structure is based on PowerCerv's belief that in any business, "Nothing happens until somebody sells something. Once the sale takes place, everyone else needs to be ready to spring into action."

Salespeople can manage entire customer relationships through a sales/marketing workbench within the sales force automation module. The workbench contains folders for logging and tracking all sales opportunities, as well as for recording any contacts—phone calls, meetings, etc.—that are scheduled or that have already taken place, with customers or prospects.

Salespeople also can use the workbench to create and track the results of sales campaigns. This feature can be employed over the Internet by building a link to the company's Web site, where prospective customers can respond to electronic questionnaires and have their answers transferred directly to the sales force automation database.

The customer support module has a similar workbench that can be used to monitor all contact with customers after an order has been placed. Users can customize either workbench to contain specific fields and buttons, including direct links to any of the other modules within the ERP Plus suite. Galloway says this sets ERP Plus apart from the competition.

production schedules that can be passed to the ERP Plus sales force automation module, allowing a company's sales and customer service representatives to give customers realistic due dates at the beginning of a sales cycle. "Companies that don't have APS software often don't have the information they need to give accurate delivery dates at the beginning of a new relationship," she says. "That's why they end up with so many late orders."

Another benefit of APS software, according to Hess, is to reduce lead times for building products, by effectively scheduling the coordination of all resources. "An overview of the production cycle is generated, allowing for adjustments to unexpected occurrences. Adjustments can be made in ways that minimize the impact on delivery schedules."

The second reason PowerCerv selected Taylor for its partnership for an APS solution was the fact that the TESS system was developed on the same software development toolset as PowerCerv's ERP Plus suite—PowerBuilder®. Montague says that having both systems on one common platform makes it very attractive for its mutual customers. "The biggest benefit to our customers is that we've integrated the TESS system with our ERP Plus system. The fact that they're both on the same platform is the icing on the cake for them. They don't have to learn another platform in order to use it. To them, it's like using one single product."



"Managing customer contacts and sales opportunities is a typical function for a sales force automation system," Galloway says. "But being able to use that same system to set customer expectations related to product configurations and pricing, or to provide available-to-promise information, is not. "Pricing data comes from the distribution module and delivery date information comes from the APS and manufacturing modules, but salespeople conducting inquiries don't have to know that. For example, if they want to check inventory status, they click a button to launch an inquiry that pulls information from the inventory management component of the distribution module. Anyone else within a company can have this type of access to any part of the suite that management wants them to have."

Galloway says ERP Plus provides such smooth information flow because all of its components were built on the same development platform with a common set of programming methods. Among other things, Galloway says, these common development methods mean the front- and back-office applications employ identical user interfaces, further reinforcing the single-face-to-the-customer concept.

By contrast, most ERP vendors that advertise such end-to-end integration either have formed strategic alliances with front-office system suppliers or acquired a front-office system from another supplier. In either case, the ERP vendor must link systems that not only have different user interfaces, but different data models and underlying programming structures as well. The most popular way of providing such links is building middleware applications that act as message brokers that take data created in one format and translate it before delivering it to another environment. Yet, as Montague points out, middleware is complex and can fail to pass data from one point to the next, which can have dramatically negative results if a machine is shut down, delaying customer orders. "Mid-sized manufacturers have enough on their hands when implementing ERP systems," says Montague. "They don't need the added burden of maintaining an extra layer of middleware. With limited IT staffing, that's just not a wise burden for them to take on."

The benefits of workflow

The underlying workflow engine enhances the smooth flow of information within ERP Plus by allowing users of any system component to route information related to individual customers throughout the organization. Galloway says the workflow engine reduces the time business processes take. "Take the process of approving a credit memo. When the customer-service rep enters the request into the system, the workflow engine can fire off e-mail messages

Achieving perfection

ERP Plus software anchors premier powerboat business

In the world of high-performance powerboats, the name Fountain has special meaning.

"We are considered the Ferrari of powerboats," says Tony Romersa, chief operating officer for Washington, N.C.-based **Fountain Powerboat.** "Our customers pay a premium price for our boats and they have a right to expect everything to be perfect from the beginning."

The need to continue its tradition of meeting high customer expectations while simultaneously managing its own rapid internal growth recently drove Fountain Powerboat to select Tampa, Fla.-based **PowerCerv**'s ERP Plus enterprise resources planning (ERP) suite as its primary business computing system.

Romersa expects ERP Plus to not only help Fountain Powerboat retain its reputation as the premier manufacturer of 25- to 60-foot powerboats, but to extend that reputation into a new market when the company launches its first line of full-sized yachts later this year.

The decision to purchase a new computing platform stemmed from management's realization that the business, which celebrated its twentieth anniversary in 1998, had outgrown its current systems. But the selection of ERP Plus was the result of a unanimous vote of a system search committee that included both members of management and rank-and-file system users.

Fountain Powerboat currently has 375 employees and generates $50 million in annual revenue. Says Romersa, "We simply cannot get the information we need to run the company from a system that was installed when we had less than $10 million in annual revenues and fewer than 100 employees."

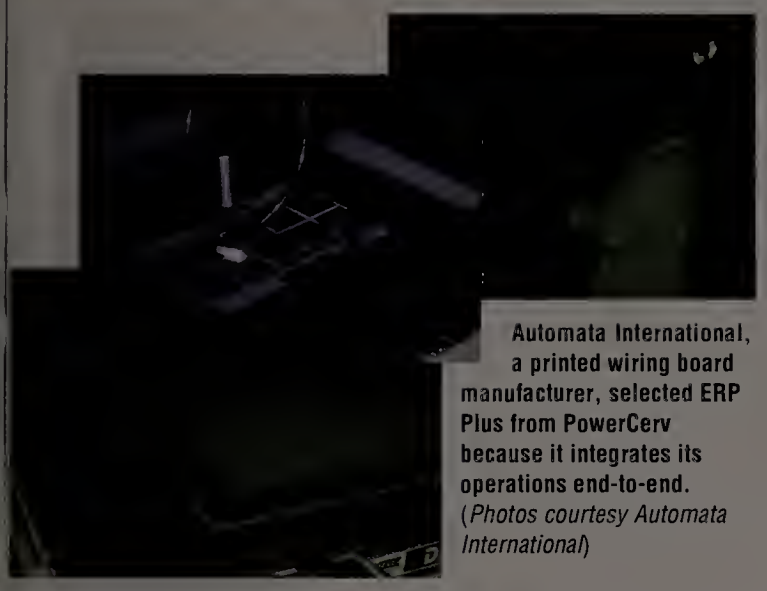
Joe Schemenauer, the company's chief financial officer who doubled as leader of the ERP system search committee, describes Fountain's current systems this way: "They have been pieced together over the years and, at this point, they represent everything that you don't want in a twenty-first century company."

The one piece that Fountain was not anxious to part with is a home-grown order management system that feeds order information taken from Fountain's dealers—including customer requests for special options—directly into its production scheduling system. That connection is essential for Fountain to make sure that all of its customers get exactly the boat they want on the date it has been promised to them by the dealer. That is why the tight integration between front- and back-office applications that ERP Plus provides appealed to Fountain's search committee. Another key selling point was the system's built-in product configurator, which will make it easier for order-entry people to not only verify whether certain options can be built, but to determine the cost of the options as well.

Important configurations

"We do have standard models," Schemenauer says, "but we also operate by an unwritten philosophy that we will do just about anything that a customer asks us to do with a boat.The problem with our current system is that it is very difficult to get timely cost data. In the PowerCerv system, all data is available in real time. That means we can determine the cost of options when orders are taken, set the selling price accordingly, and ensure we make money."

Other factors that contributed to Fountain's selection of ERP Plus, according to Schemenauer, include its consistent, user-friendly interfaces; and its open technology platform. Fountain will run ERP Plus on the Windows NT operating system with Microsoft's SQL Server as its primary database, a setup that Schemenauer says should make the system easy to install and maintain. In fact, Schemenauer expects the entire implementation process to take roughly three months, with the biggest challenge being getting users



Automata International, a printed wiring board manufacturer, selected ERP Plus from PowerCerv because it integrates its operations end-to-end. (*Photos courtesy Automata International*)

to everyone involved in that approval process. That allows people to be proactive in resolving customer issues."

Doug Haymes, PowerCerv's vice president of product management, points out how this quick flow of information can be important even in areas that normally are not associated with customer relations. "If someone in accounts receivable calls a customer about an open invoice, and finds out the customer is withholding payment because there was a problem with the product, they can make a note of that and, through the workflow engine, send that note directly to a customer support person. And just as important, the note remains in the accounts receivable files to prevent collections personnel from calling on that same invoice two days later and irritating the customer."

Easily adaptable

PowerCerv customers routinely express appreciation for how easily various components of the ERP Plus suite can be adapted to their specific needs.

CTI, a leading manufacturer of medical scanning equipment based in Knoxville, Tenn., has attached an existing Lotus Notes-based e-mail and workflow system as a front-end to the ERP Plus suite. This link is for users who occasionally need to view manufacturing data, but don't routinely use other parts of the system, such as product engineers who view existing bills of material when designing new products. Mary Lou DuBois, IT manager for the $75-million-a-year company, says the open technology on which the ERP Plus suite is built enabled CTI to create this custom application, which she ultimately expects to make available to all CTI employees, as well as selected suppliers, over the Internet.

Buckmaster says ERP Plus was technically ahead of all of the systems Interphase encountered, which makes him believe it will support Interphase's business not only now, but for the foreseeable future. "It was clear to us that PowerCerv's system is at the front-end of its life cycle, and that was important to us, because we are entering a period where we expect substantial growth over the next several years," Buckmaster says. "We also found most ERP vendors have very limited back-office support for sales force automation. They typically are interfacing their back-office systems with a third-party sales force automation package, or they have a dial-up mechanism that is not designed to support outside salespeople."

Buckmaster also was impressed with the design of ERP Plus, specifically its object orientation, which he says is the key to the consistent look that is displayed throughout the system. "Our users also noticed that the data flowed through the system in a logical fashion," Buckmaster says. "If they entered data in one place, and expected to see it in a certain place down the line, it would be there."



Photo courtesy Fountain Powerboat

DuBois says ERP Plus has had a profound impact at CTI since it went live at its Knoxville headquarters last October. It currently is being used to organize the financial reporting of the four business units that comprise CTI, and to coordinate purchasing, including the procurement of services from contract manufacturers that produce subassemblies for CTI's products. DuBois says ERP Plus is fostering camaraderie within CTI's work force. "Because they now have a better overview of how the business really flows, people are more appreciative of what each department does." Which, incidentally, is the first requirement for any company that wants to show a single face its customers. ■

who have been working on character-based terminals accustomed to the graphic-oriented Windows interfaces.

A manager's dream

From a management standpoint, Romersa likes everything about ERP Plus—including its price. "I came to Fountain Powerboat from a $4-billion company with 40 people in its MIS department at the corporate level alone, and this system is giving us basically everything we had there, but at a much lower cost. It will allow us to maintain a small, tightly knit MIS staff while also providing the information we need to effectively run the business."

Romersa is especially enamored of the ease with which he and his operating managers will be able to extract information from the system. "Right now, our management reports consist of hard-copy printouts because it is difficult to get information out of the system," he says. "The major problem with that is the timeliness of the data. Managers are getting production status reports at the end of the week, which means it's already too late to take corrective action if something has gone wrong during the week. With the new system, we will be able look at status reports on-line, in real time, and then drill down and see exactly what is happening at that moment."

With ERP Plus anchoring its business, Fountain Powerboat should stay clear of troubled waters.

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CTI Inc. is a manufacturer of medical imaging equipment for the health care industry.

IT PROS PICK UP SLACK AS OUTREACH ADVISERS

Communities, organizations, small firms benefit from corporate Y2K know-how

BY PATRICK THIBODEAU

THE YEAR 2000 problem is creating opportunities for civic-minded information technology professionals and their companies that want to become community activists.

For instance, Prudential Insurance Company of America in Newark, N.J., has been helping small businesses and local schools deal with the year 2000 problem through workshops and a year 2000 assistance kit based on its own remediation program.

"I really believe that more large companies should start helping — because the real way this problem gets solved is by taking action," said Irene Dec, Prudential's year 2000 program manager.

IT professionals are also getting involved via local community year 2000 action groups, which are springing up across the country.

Dick Mills, a technical consultant at Compaq Computer Corp.'s year 2000 center in Albany, N.Y., also works with the Capital District Y2K Interest Group. Its 50 members, about half of whom have IT backgrounds, advise local agencies and community organizations on year 2000.

"We owe the world our efforts to help mitigate the damage as best we can," Mills said.

Year 2000 experts said IT professionals can help raise community awareness — and act as informal watchdogs — by questioning local government and utilities about their year 2000 preparation efforts and contingency planning. They can also demystify the issue, said Frank Martinez, executive director of the Los Angeles Year 2000 Project Office.

States and large cities are now working to contact small businesses about the year 2000 problem. Missouri, for example, expects to spend close to $1 million on its outreach program. State CIO Mike Benzen will spend 15 days this month meeting with groups throughout Missouri to discuss the year 2000 issue.

Benzen and others in his position aren't advising IT professionals to volunteer to repair code at their local doctor's office, for example, and they aren't soliciting volunteers to repair government systems, citing potential liability problems. But volunteers can raise pointed questions at civic meetings about a community's year 2000 efforts and also educate small businesses and community groups.

Even if year 2000 produces only minor inconveniences, work is needed to prepare people so they won't overreact, said Marsha Woodbury, chairman of the Computer Professionals for Social Responsibility. "People can turn nasty really fast — you really want to prepare people," she said. ◗

A Few Ways to Help Out

NATIONAL GROUPS	
Tech Corps	*www.techcorps.org*
Y2K Expert Service (YES Corps)	*www.iy2kcc.org*
LOCAL GROUP EXAMPLE	
Northern Utah Community Preparedness Group	*www.bunkergroup.com/y2k*

Last Week's SEC Filings Show Confidence

Main concern for three respondents is partners' preparedness

BY ANNE MCCRORY

In quarterly reports filed last week with the Securities and Exchange Commission, three more companies expressed optimism about their year 2000 preparedness — but caution about their trading partners.

Consider the following excerpts from the filings:

Family Dollar Stores Inc. in Charlotte, N.C., said it has almost finished its $1 million project to fix and test its software applications and critical non-IT systems with embedded technology. The company cited the following as its greatest risks:

- Unprepared suppliers. But because no single supplier provides more than 1.5% of the company's merchandise, Family Dollar doesn't foresee significant problems from suppliers that experience year 2000 operational failures.
- Transportation and utilities. Almost 40% of the company's merchandise was imported in fiscal 1998, so any significant disruptions in global transportation or delays at customs could be problematic. Interruptions of utility service could also have adverse consequences. The company said it expects to have a contingency plan in place by June.

Footwear maker **Stride Rite Corp.** in Lexington, Mass., said it expects the bulk of the IT systems involved in its $24 million, year 2000 effort will be tested and certified by June. The company said testing of a small number of critical business systems may not be completed until September.

Contingency plans that are being "developed on a case-by-case basis" include encouraging customers to place orders before potential business disruptions, manual intervention of processes or finding alternative suppliers," it said in its filing. Plans also include avoiding partners that could present unacceptable levels of risk.

Kindercare Learning Centers Inc. in Portland, Ore., doesn't use information technology in educating children, but does use it in its financial reporting systems and its payroll, purchasing and support functions.

It has tested about 30% of its critical systems and expects to finish testing and remediation of all remaining critical systems by July. The company said it will incur no significant costs related specifically to year 2000 upgrades.

However, it cited the following potential problems:

- Difficulties getting materials from suppliers that encounter year 2000-related problems, which could affect Kindercare's schedule for opening new centers. Also, if supplies to current centers are affected, it might cost Kindercare more to use alternative suppliers for food and other products.
- Delays in tuition payments from government agencies could require Kindercare to fund cash-flow requirements through additional borrowing measures, it said. ◗

BRIEFS

Utility Updates Status

Southern California Edison said its year 2000 program is 80% complete and will be completely ready by July. The Rosemead, Calif.-based power company has committed $72 million and 500 full- and part-time staffers to its year 2000 program.

FAA Test Questioned

Although some people were reassured by recent Federal Aviation Administration (FAA) year 2000 tests, an analyst warned that the results should be viewed with skepticism. Andy Bochman, an analyst at Aberdeen Group Inc. in Boston, said the tests, run on the weekend of April 12, were conducted at one of the nation's newest airports – and so should be taken with a "major grain of salt."

"Nothing seemed to be out of the ordinary" when the agency rolled the clocks forward to Dec. 31 within the air-traffic control system at Denver International Airport, an FAA spokesman said.

Japan's Remediation Moves Ahead

A Japanese government report was upbeat about measures taken by the country to repair year 2000 computer problem but said doubts linger over the preparedness of its local governments and its small and mid-size businesses.

Released by Japan's Ministry of International Trade and Industry, the report compiled results from several government agencies.

SNAPSHOT

Competitor Comparison

Here's how the top two public food companies in the U.S. are doing on the year 2000 front:

	CONAGRA INC.	SARA LEE CORP.
Fortune 500 rank	50	64
Estimated costs	$69M to $79M	$50M
Notes	ConAgra has spent about $19M; it expects contingency plans to be completed by June	Sara Lee says all work will be done by end of year; says costs won't have "material" effect on its operations

ConAgra products include brands such as Healthy Choice, Wesson and Peter Pan; Sara Lee products include Hillshire Farms, Jimmy Dean Sausage and Sara Lee bakery items

SOURCE COMPANIES' LATEST 10-Q FILINGS (CONAGRA ON JAN. 12, SARA LEE ON FEB. 8) WITH SECURITIES AND EXCHANGE COMMISSION

Insurers Mine for Age-Appropriate Offerings

BY THOMAS HOFFMAN

Insurance companies record gobs of cradle-to-grave information on customers. But until recently, they had a tough time digging it out of their mainframes. That's why they're ramping up their use of data mining tools to better understand their customers and identify events that trigger them to buy insurance.

"Wouldn't it be nice to offer an understanding of college loans or car insurance [to a customer whose] child is approaching 16 or 18 years old?" said Dominick Cavuoto, who is a partner at KPMG Peat Marwick LLP in New York.



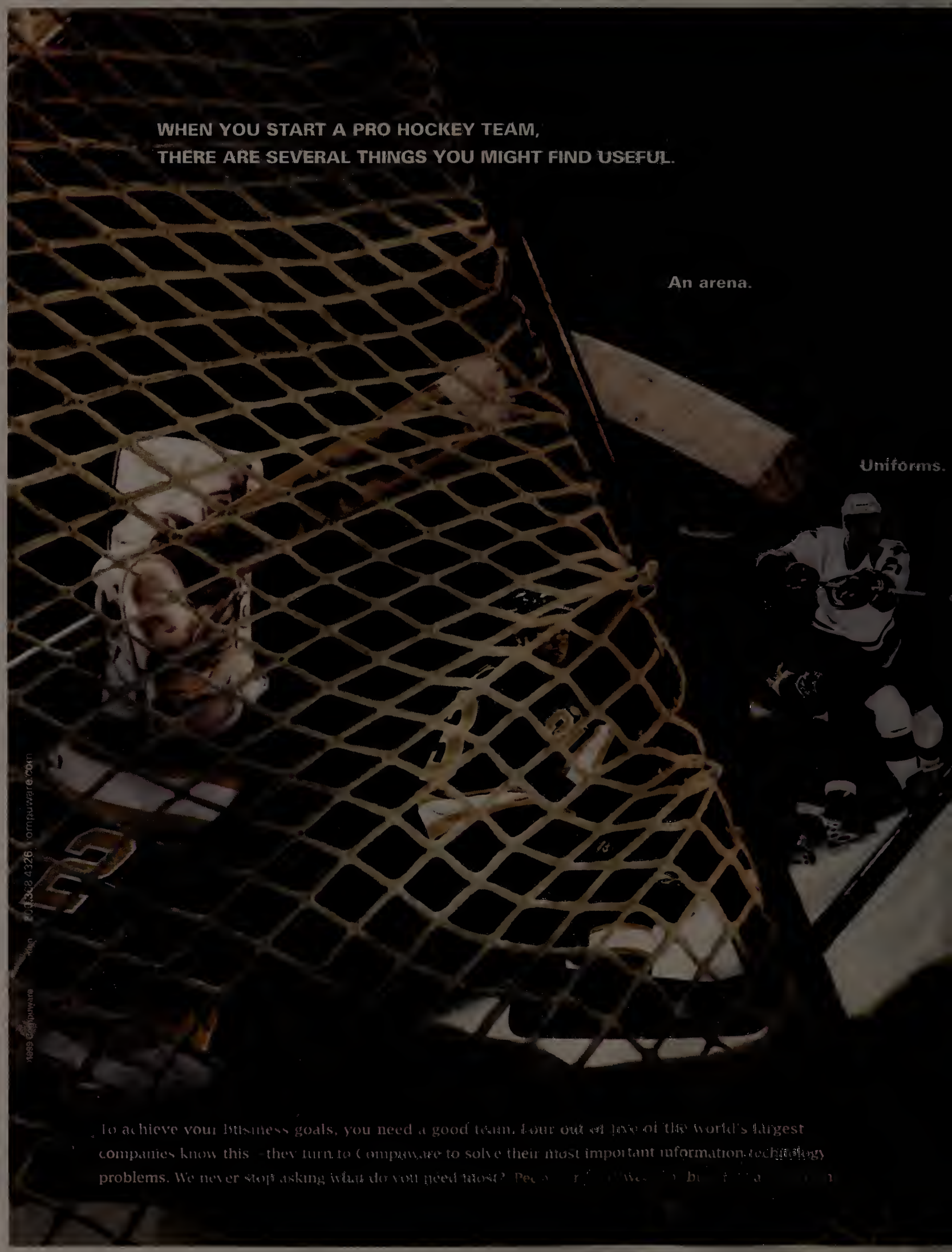
JIM LENAHAN: Paper reports will be replaced by online versions

Besides, it's "a lot easier to sell a product to an existing customer than to find a new customer," said Jim Klinck, vice president of application development at Metropolitan Life Insurance Co. in New York.

Two years ago, The Prudential Insurance Company of America started work on a multitiered data warehouse to help its business units share customer data and create more cross-selling opportunities. The system centers on IBM's DB2 but also uses Sybase Inc. data marts. It houses about 3T bytes of data on customers, most duplicated from divisional databases. It costs Prudential "a few million dollars" in extra operating costs to support duplicated data, but that figure pales in comparison with the revenue opportunities it creates, said Peter Lacovara, chief systems architect at the Newark, N.J., insurer.

Crawford & Co., a claims processor for insurance firms, is taking a Web-based approach to delivering reports to its 3,000 clients. It's using Information Builders Inc.'s Web Focus reporting tools to deliver reports online. By midsummer, Crawford should be able to begin replacing the 12 million pages of reports it sends customers monthly, said Jim Lenahan, CIO at the Atlanta-based company. For example, using the data from inspections conducted for auto lessors, Crawford hopes to use Web Focus and other tools to tell insurers whether, say, blue Toyota Corollas in New England have a greater chance of getting dents in their left fenders than green ones, he said.

While data mining offers insurers revenue opportunities, a major challenge they face is making sure customer data is accurate and consistent. "The reality is that many companies have common [customer] data across multiple products, so even data points like date of birth and addresses don't always match," said Bob Ingram, senior vice president of customer relationships management at USAA, a San Antonio-based insurer.



Fast ERP Installations Need Fine-Tuning

BY CRAIG STEDMAN

You spend millions of dollars and a couple of years installing an ERP system. And then you realize: You're not done yet.

The rush to put enterprise resource planning (ERP) applications in place doesn't always leave time to set everything up the way end users want, so companies have to go back to fine-tune their software configurations and internal business processes.

Take Hydro Agri North America Inc., which has installed SAP AG's R/3 software at most of its operations. In January, Hydro Agri put more rollouts on hold as part of its year 2000 preparations, but that doesn't mean the Tampa, Fla., fertilizer maker is taking a full breather from R/3 work.

Nine Hydro information technology staffers are now focusing on "taking what we've got and making it better" by revising the R/3 system to more closely match business needs, said Andy Hafer, the company's director of information management.



HYDRO'S ANDY HAFER: "Taking what we've got and making it better"

For example, Hydro is making changes to R/3 so it can track inventory transfers between warehouses as well as rebates owed to customers. Those features were initially left out to meet deadlines, said Ron Whyte, a senior systems analyst.

End users with R/3 experience under their belts are also proposing wish lists of software alterations, Whyte said. "A lot of times, they can't really relate to the system until after they've been on it," he added.

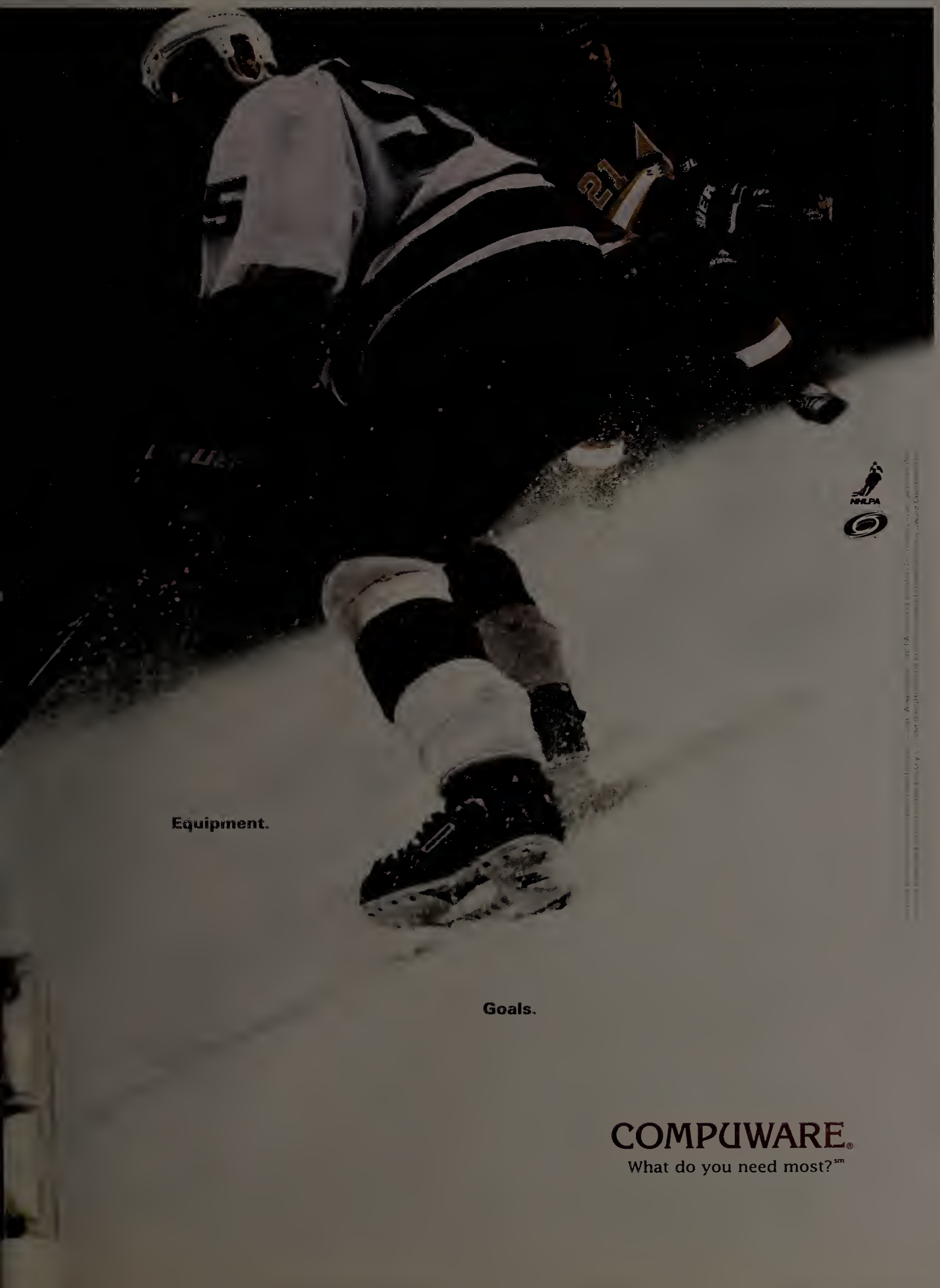
Confirming a Good Fit

Motts North America Inc. is another R/3 user that tried to find ways to "tighten it up and make sure it was the right system for our business," said Jeff Morgan, vice president of IT at the juice and applesauce maker in Stamford, Conn.

After installing R/3 two years ago, Motts held feedback meetings with business executives and hands-on users, Morgan said. It also brought in consultants from SAP to review its configuration of the software.

Most of the tinkering that was done involved changes in business processes, but R/3 was also reconfigured in some cases. For example, one application was frustrating finance workers at the company's plants because the original setup didn't meet all their functional needs, so the software was changed, Morgan said.

David Dobrin, an analyst at Benchmarking Partners Inc. in Cambridge, Mass., said changes after a rollout become even more likely when companies use rapid-deployment schemes. In those cases, the need for alterations "is guaranteed," Dobrin said. ◗




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Canadians Access Government Data Online

BY JAIKUMAR VIJAYAN

An online service providing Internet access to selected government databases such as registry and property tax information is making life easier for users of the system in four Canadian provinces.

What's particularly interesting is that the vendor that built the service also paid for it, with the promise of a cut of the service fees later on.

Atlantic Canada Online (ACOL) is a fee-based service that lets users — mainly financial institutions, real-estate companies, law firms and a few individuals — retrieve, search, update and register information relating to things like properties, taxes and debts.

Under construction since 1996 by Unisys Canada, which committed as much as $10 million and five years to the project, the network charges fees to financial services firms and banks that use the service, said Clyde Horner, ACOL coordinator in Halifax, Nova Scotia.

The system links Web sites to mainframes and servers in state agencies in Nova Scotia, Newfoundland, Prince Edward Island and New Brunswick. The provinces put property registration systems online.

JUST THE FACTS

ACOL Basics

What is ACOL? Online service that provides Internet access to selected government databases in Canada.

Where is it available? The provinces of New Brunswick, Prince Edward Island, Nova Scotia and Newfoundland.

What does it let users do? Search, retrieve, update and register certain types of government data in a secure manner.

Do users have to pay for access to the database? Yes, it costs $5 per search.

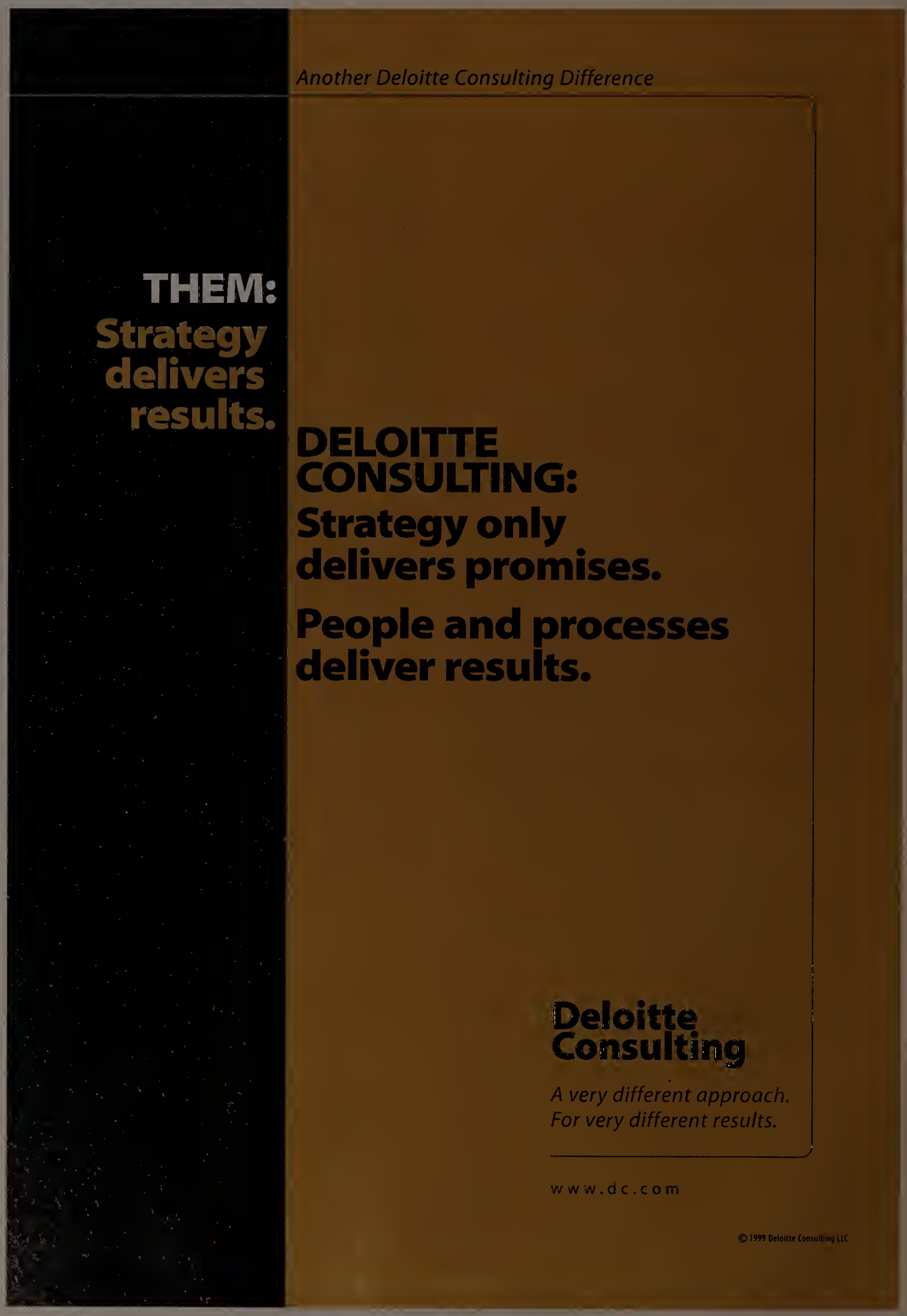
Future plans include a property tax information system and a business registration system in Nova Scotia.

ACOL provides faster access to information, said Barb Heinrich, manager of national customer service at the Canadian Securities Registration System in Richmond, British Columbia, one of the largest users of ACOL. The company is using the service to help its clients register property information with local authorities.

Before ACOL, a manual system required lenders, using property as collateral for loans, to send representatives to a county registration office to investigate — sometimes in all of Nova Scotia's 18 counties.

"From the government's point of view, I now own an improved service without having the overhead of managing it," said Don Scott, an ACOL project manager for New Brunswick's provincial government.

Users register by depositing money with Unisys. When a transaction is done, Unisys withdraws a fixed amount from the deposit, keeping part of it and transferring the rest to a government account. The fee for online document registration is $7. A search costs $5.



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NEW REPORTS

Web Beats EDI

Compared with electronic data interchange (EDI), Web-enabled procurement systems are cheaper, easier to use and more scalable, according to a report by International Data Corp. (IDC) in Framingham, Mass.

In "Tracking the Dollars: Direct Business-to-Business Buying Over the Internet," IDC presents forecasts for electronic-commerce transactions in the U.S. manufacturing industry, profiles early adopters and describes best practices.

IDC states that adoption of Web-enabled procurement systems will be fastest at small and midsize companies, which don't typically have large investments in EDI.

The report costs $2,500.
www.idc.com

Utility Bills Online

Utilities are beginning to embrace electronic commerce, although primarily for bill presentation and not payment, according to the C Three Group LLC.

In a report titled "Internet Billing and Payment Systems for Energy Providers," the Atlanta-based research firm analyzes the Internet as a system for utilities to communicate with their customers.

The report summarizes the differences between direct billing, e-mail and consolidator Internet billing models. It describes the technical complexities of electronic data interchange, Hypertext Transfer Protocol (the Web protocol) and other system issues, and it profiles 13 of the first utilities to offer online billing.

The report costs $895.
www.cthree.net

BOOKS

Global Teams

Global Software Teams by Erran Carmel (Prentice Hall Inc., $39, 269 pages) is touted as a best-practices guide to organizing and managing global software teams.

Carmel, who directs American University's program in management of global information technology in Washington, looks at the cultural issues that drive global teams apart and how to combine technology and good management practices to keep those teams working effectively.

IT's Value Detailed

Information Technology and the Productivity Paradox by Henry C. Lucas Jr. (Oxford University Press, $27.50, 225 pages) examines how to find direct and indirect returns from IT investment and make better IT investment decisions. "The objective of this book is to demonstrate that there is value from investing in IT," the author writes in the preface.

Lucas is a research professor at New York University's Stern School of Business.

Hiring and Firing

In *Unofficial Guide to Hiring and Firing People* (Macmillan USA, $15.95, 514 pages), Alan S. Horowitz has put together a soup-to-nuts guide on this most important of management decisions. Topics include screening, selection, marketing job openings, legal issues, and hiring and firing strategies.

Horowitz writes regularly on human resources management for *Computerworld*.

SNAPSHOT

It Isn't Just You

IT service firms have staffing problems, too:

Turnover at IT services companies averages 20%

Recruiting costs average 2.3% of revenue

Referral bonuses range from $1,665 to $4,118

These 211 consultancies, representing a cross-section of independent [illegible] Five consultancies

SOURCE: G2R/DATAQUEST, MOUNTAIN VIEW, CALIF.

ED YOURDON

Y2K compliance: Hard lies, soft lies

I RECENTLY ENCOUNTERED three blatant lies about year 2000 compliance. They were uttered by knowledgeable, informed senior managers in three different industries, in three different states, during one week. I've been in the Y2K business long enough to differentiate between a lie and an exaggeration. I'm familiar with "soft lies" from spokesmen who tell us their organization is "substantially finished" when they've done no testing. I also know that we live in an era in which the determination of truth depends on what the meaning of "is" is. Nevertheless, I'm convinced that what I experienced were "hard" lies.

I'm not suggesting that this is a universal situation. I know that most, if not all, large organizations are working hard on Y2K. But Y2K puts an enormous amount of pressure on business managers, and it places organizations under intense scrutiny by regulators, politicians, customers and financial analysts. Thus, I can understand why public relations departments put a positive spin on their Y2K statements, and I sympathize with executives who feel obliged to stonewall detailed Y2K inquiries. That explains the soft lies, the half-truths, the exaggerations, the caveats and the qualified statements that we see in Securities and Exchange Commission 10-K filings.

But it neither explains nor justifies the hard lies — and I worry that we'll be seeing more of them in the months to come.

The reason this is so important for Y2K managers is that most companies are approaching the "moment of truth," when they'll have to decide whether to abandon their mission-critical suppliers and customers. The automobile industry, for example, set a March 31 deadline for its 125,000 suppliers; inevitably, some of those suppliers were found to be noncompliant. Inevitably, some also will have been tempted to lie about their status.

Y2K managers already have considerable experience with soft lies because computer hardware and software suppliers have been releasing updates to their products in an attempt to make them year 2000-compliant. If it's an operating system or a database management system, there's a good chance the IT organization will put it into production as soon as possible — at which point it often becomes evident that the upgraded software isn't Y2K-compliant after all.

Presumably, the vendors would not have released the upgrade if they were aware of the compliance issues. Hence, I'm inclined to treat their optimistic statements as exaggerations, or soft lies, if it turns out that they weren't compliant after all.

I worry that we'll be seeing more hard lies in the months to come.



These aren't minor issues, by the way: As of mid-March, it still wasn't clear whether Service Pack 4 can be trusted to make Windows NT 4.0 fully Y2K-compliant. What does all this mean to the Y2K manager? It means that we can't trust any verbal or written statements about Y2K compliance unless they're produced by a competent, independent, third-party auditor.

If your organization has several hundred mission-critical suppliers and vendors, you might argue that you don't have the time or resources to carry out a thorough audit or test of each. But it's crucial that you select a statistically significant sample of those suppliers — perhaps 10% to 20% of the total — and carry out whatever detailed testing is necessary to ensure that your systems and their systems work properly together, and that the supplier has taken all other steps necessary to ensure that it will remain in business after the Big Day. The results from these tests can then be used to estimate the number of failures — most of which will be disguised by a combination of hard lies and soft lies — by the rest of the suppliers on whom you depend.

Yourdon heads the year 2000 service at Cutter Consortium in Arlington, Mass. Contact him at ed@yourdon.com.

Computerworld's Annual JOB SATISFACTION SURVEY

LIVING WITH THE PAIN

IT professionals say they still feel largely ignored, overworked and underpaid. Fortunately, most say they're still loyal to their employers

By Tim Ouellette



STEPHEN SHEFFIELD

IT WORKERS JUST WANT TO CONTRIBUTE.

But when information technology staff members aren't allowed to play an important role in their organization's success, are misunderstood and kept at arm's length by the business side or are given an unreasonable set of expectations from management, you can expect unrest in the ranks.

In fact, IT professionals point to such treatment as the biggest source of their growing job dissatisfaction, based on the results of *Computerworld*'s Annual Job Satisfaction Survey. IT workers had plenty more to say about other issues related to their jobs, paychecks and bosses.

A state agency in the Midwest turned around its IT staff's outlook by addressing some of those concerns.

"They are now treating me like a CIO is supposed to be treated," said James West, CIO for the auditor of the state of Indiana. "These people have a fairly decent understanding of data processing, and since 90% of what gets done in this office is controlled by data processing, we are finally getting the recognition we deserve."

West said that previously he wasn't consulted for important decisions affecting the agency — despite the important role that technology plays in the agency's work.

That feeling of being slighted, ignored or undervalued isn't limited to IT managers. Rank-and-file employees often complain of the same treatment — and two-thirds of respondents to the *Computerworld* survey said their frustrations with those key elements aren't improving.

For example, a programmer at a manufacturer in the Northwest said she isn't contributing enough because her new manager doesn't understand technology. "The supervisor who hired me quit, and I have a new supervisor who is not an IS person," she said. Though the new supervisor asks that programmer for input on projects, he makes the decisions on his own, with no regard for her concerns, she said.

Another programmer said her new CIO brought in her own people from a previous company, leaving the programmer with little chance to get ahead. "I have been pigeonholed into an area with no advancement or change of responsibilities," she said.

That's a trend that has shown up in past Job Satisfaction surveys. It shows that, although many companies have reaped the success of marrying the technology and business sides of organizations in recent years, there are still lots of places that haven't taken that step. Based on the latest survey's results, they should.

To find out what IT professionals, contractors and consultants think about their jobs, their paychecks and their bosses, we asked them to report their levels of satisfaction on a variety of compensation and workplace issues. A total of 511 IT professionals responded to our mail survey, with another 430 participating in the survey online.

What's Going On Here?

Generally, respondents said they're still happy to be working in IT and are basically loyal to their companies. But they also said they're undervalued by their employers, receive little communication on how they can contribute and are overworked.

Most said that they're happy with the technologies they work with, but that training opportunities could be better. Many said that their opportunities for advancement are limited and that managers do an unsatisfactory job of discussing career development. If those matters don't improve, most said they at least expect more money and more-frequent bonuses.

The feedback from the mail and online survey respondents was nearly identical — and revealed some interesting insights into the areas in which things are improving or getting worse. Consider the following:

- A little more than half said they are satisfied with their salaries; nearly one-third expressed dissatisfaction with their paychecks. In one example, a programmer said his overall satisfaction with work increased because "some gross salary inequities of long-standing have finally been corrected."

More revealing: Less than half are happy with the connection between their salaries and the performance they provide. It naturally follows that nearly half are dissatisfied with the amount in bonuses they receive from their employers.

- Many rank-and-file IT professionals cited a lack of career support and training from their supervisors as a reason for their dissatisfaction. On the other hand, 55% said they are satisfied with their current training opportunities. But training of the user community is still a concern. "If we can get training nailed, it would solve 40% to 50% of our problems with the users," said West, the CIO at the state government agency.
- Two-thirds of the survey respondents said they're unhappy about their lack of opportunities for telecommuting. Even though technology has provided many businesspeople with the chance to work from home, many IT staffers said

Job Satisfaction Survey, page 52

Reaching the Breaking Point?

Work is getting to be very stressful in IT — ask anyone involved in the profession. Here's how the IT professionals surveyed rate their stress levels:

STRESS LEVEL	MALE	FEMALE	UNDER AGE 35	AGES 35 TO 44	AGES 45 TO 54	AGE 55 AND OVER	SENIOR IT EXECUTIVES	MIDLEVEL IT MANAGERS	IT PROFESSIONAL
Very stressful	28%	28%	17%	26%	35%	25%	40%	31%	15%
Somewhat	60%	58%	67%	60%	54%	65%	50%	59%	67%
Not very	11%	12%	12%	12%	11%	10%	9%	9%	16%
Not at all	1%	2%	4%	2%	1%	0%	1%	1%	2%

SOURCE: COMPUTERWORLD MAIL SURVEY OF 511 IT PROFESSIONALS

If You Really Love Me, You'll Give Me . . .

Things IT professionals say they would most like improved to increase their levels of job satisfaction:

	MALE	FEMALE	UNDER AGE 35	AGES 35 TO 44	AGES 45 TO 54	AGE 55 AND OVER	SENIOR IT EXECUTIVES	MIDLEVEL IT MANAGERS
1. Salary increase	62%	61%	74%	63%	59%	54%	63%	62%
2. Performance bonuses	50%	50%	56%	50%	48%	43%	53%	47%
3. Availability of IT training	40%	45%	46%	46%	35%	36%	33%	38%
4. Access to new technologies	38%	37%	44%	44%	32%	29%	30%	36%
5. Opportunities for advancement	36%	40%	34%	41%	38%	23%	32%	36%
6. Clearly defined decision-making authority	33%	44%	30%	39%	35%	34%	30%	42%
7. Clearly defined role/responsibilities	29%	33%	25%	35%	27%	32%	27%	32%
8. Nonmonetary recognition	27%	37%	23%	30%	31%	32%	29%	31%
9. Opportunities to contribute to business goals	29%	26%	20%	35%	27%	21%	32%	29%
10. Relationship with IT manager	30%	18%	19%	24%	31%	34%	30%	23%
11. Freedom to telecommute	24%	39%	43%	28%	21%	23%	19%	30%
12. Feedback from immediate supervisor	26%	23%	13%	27%	27%	34%	27%	22%

SOURCE: COMPUTERWORLD MAIL SURVEY OF 511 IT PROFESSIONALS

Computerworld's Annual JOB SATISFACTION SURVEY

Continued from page 51

they are still stuck in the office, ministering to the needs of telecommuters at all hours of the day and night.

The good news? Despite their feelings about specific issues, 88% of IT workers remain a very loyal lot — even in the red-hot IT skills market. And 89% said they like their job and want to stay. Most workers want their more-challenging assignments to come from their current employers.

For example, the programmer who feels pigeonholed still described herself as very loyal to her company and happy with her IT career, even with little hope for advancement in the near future.

Most said they want to stay with their employers for at least the next few years, even though 72% said recruiters or other employers have contacted them about job offers in the past year.

Enjoying Their Work

A robust 78% said they really enjoy the work they are doing, and even more — 92% — are happy with their career decisions and want to keep making contributions to the IT field. But few IT professionals are fully satisfied that their work has an impact on the day-to-day success of their companies. And less than half said they receive a measure of respect from their user communities.

For example, one IT manager said business managers at his financial services company wanted to create an immediate link with another company using middleware. They went and made all the business arrangements for the deal with the other firm — without listening to the IT manager's warning that it could take a few months for the other company to get its technology preparations in place. "It would be like me making a business decision when I really didn't know all of the business factors involved," the IT manager said. "If everything was that simple in the IT world, we wouldn't be making a living."

A programmer at a consulting firm in the Northeast said he sees that lack of recognition for what he does as a serious problem with his job. "I have less desire to perform exceptionally, since there is no recognition for it," he said. "Not enjoying work means I will not perform at my best."

At other companies, because of indifference or a misunderstanding of technology, some IT groups get shuffled around the organization, reporting to different managers depending on those managers' personal understanding of technology. That can leave the group feeling unwanted as a whole, even though group members may be facing a lot of new challenges in their work. The resulting frustration can be felt at all levels of the IT organization.

"I previously reported to the [chief financial officer], but that was changed so I now report to the manufacturing side of the business," said the CIO at a Northeast manufacturer. As a result, his group has started many projects and been challenged in new ways, but all of the projects are oriented toward manufacturing — to the detriment of other areas of the company's business.

"Ideally, MIS should report to a neu-

The Best of Times

What's helping that picture:

IT PROS WHO ARE THE MOST SATISFIED WITH THEIR JOBS SAY THESE ARE THE REASONS WHY:
Increased job responsibilities
Increased salary or promotion
New challenges
Exposure to new technologies
New boss or better communication with boss

The Worst of Times

What's hurting that picture:

IT PROS WHO ARE THE LEAST SATISFIED WITH THEIR JOBS SAY THESE ARE THE REASONS WHY:
Lack of direction/supervision from manager
Lack of challenges
New manager or supervisor
Company merger or buyout
Change in job duties and responsibilities

SOURCE: *COMPUTERWORLD* MAIL AND ONLINE SURVEY OF 941 IT PROFESSIONALS

The Difference Between the Sexes

Asked how they feel about the top IT compensation and workplace issues, here's how men and women rate their levels of satisfaction:

ISSUE FOR MEN	VERY SATISFIED	SOMEWHAT SATISFIED	NEITHER SATISFIED NOR DISSATISFIED	SOMEWHAT DISSATISFIED	VERY DISSATISFIED
Salary	16%	40%	14%	22%	8%
Amount of bonuses	12%	26%	20%	21%	21%
Opportunities for training	23%	32%	17%	19%	9%
Opportunities to use new technologies	23%	41%	18%	14%	5%
Connection between pay and performance	15%	36%	18%	22%	9%
Opportunities for advancement	10%	24%	29%	26%	12%
Ability to discuss career goals	18%	26%	28%	20%	8%
The work itself	34%	45%	12%	7%	1%
Opportunities for new challenges	20%	43%	18%	17%	3%
Understanding the business mission	28%	38%	22%	8%	4%

ISSUE FOR WOMEN	VERY SATISFIED	SOMEWHAT SATISFIED	NEITHER SATISFIED NOR DISSATISFIED	SOMEWHAT DISSATISFIED	VERY DISSATISFIED
Salary	12%	43%	12%	25%	8%
Amount of bonuses	10%	22%	13%	29%	26%
Opportunities for training	23%	43%	8%	18%	8%
Opportunities to use new technologies	29%	41%	11%	11%	7%
Connection between pay and performance	18%	34%	13%	24%	10%
Opportunities for advancement	7%	26%	20%	35%	12%
Ability to discuss career goals	20%	31%	27%	12%	10%
The work itself	37%	41%	7%	11%	3%
Opportunities for new challenges	25%	37%	16%	17%	4%
Understanding the business mission	29%	43%	20%	6%	1%

SOURCE *COMPUTERWORLD* MAIL SURVEY OF 511 IT PROFESSIONALS

tral part of the business," he said.

A research specialist at a financial company in California said that, although she's very happy with her job, she has been unable to work to her full potential because of requirements in other parts of the company. "Progress [on infrastructure projects] is frequently delayed due to resources being shifted to other, more short-term efforts," she said.

But there are also some success stories in the mix. The CIO at a Midwestern college is reaping the rewards of gaining tighter control over IT projects. His group is now an autonomous, equal player in the business hierarchy, but it took a lot of work to please users and build relationships with the CFO and vice presidents to make it happen, he said.

Why Are You Doing This to Me?

Our survey shows that stress is on the rise in a traditionally stressful line of work. Nearly 60% labeled their job "somewhat stressful"; 28% said their work is "very stressful." And 92% said their stress level has stayed the same or increased in the past year.

The reasons: more responsibility, a bigger workload and unrealistic expectations. For example, one configuration manager in Georgia said his job is more stressful now because of "increased responsibility without commensurate authority or pay."

Some of that added stress is OK, IT workers said, if the responsibility and involvement are tied to the success of their companies. Indeed, survey respondents said businesses can do the most to increase workers' job satisfaction by giving them more responsibility and challenges, providing better communication about expectations and offering higher salaries.



STEPHEN SHEFFIELD

"We are dealing with many new products and systems, which adds stress," said one IT manager at an insurance firm in San Francisco. "But it also adds challenges to the job. As a result, there is a lot of opportunity here."

In that case, the business needs of the company are driving technology improvements and innovation. That's because agents in the field are demanding better service, and technology is the best and fastest way to get it done — a fact upper-level business managers recognize and accept.

"Management is really involved with our technology decisions and [understands] the strategic importance of technology and our department," the college CIO said. ◗

Ouellette is a freelance writer in Scarboro, Maine.

> They are now treating me like a CIO is supposed to be treated.
>
> JAMES WEST, CIO FOR AUDITOR, STATE OF INDIANA

How Satisfaction Stacks Up in Different Cultures

Depending on where IT pros work, they display different — or strikingly similar — feelings on key issues:

RANKING	IT USER ORGANIZATION	IT VENDOR COMPANY	IT CONSULTING FIRM	IT CONTRACTING FIRM
1. Salary increase	52%	46%	42%	72%
2. Performance bonuses	65%	51%	61%	78%
3. Availability of IT training	57%	55%	57%	72%
4. Access to new technologies	48%	43%	47%	61%
5. Opportunities for advancement	73%	67%	58%	72%
6. Clearly defined decision-making authority	68%	65%	65%	78%
7. Clearly defined role/responsibilities	54%	56%	57%	50%
8. Nonmonetary recognition	59%	53%	51%	61%
9. Opportunities to contribute to business goals	58%	56%	46%	56%
10. Relationship with IT manager	39%	29%	41%	33%
11. Feedback from immediate supervisor	50%	47%	61%	39%

SOURCE *COMPUTERWORLD* ONLINE SURVEY OF 430 IT PROFESSIONALS

Top Retention Challenges

What IT professionals are most unhappy about depends on where they are in the IT workforce. Here are the top causes of dissatisfaction by group:

IT USER ORGANIZATIONS

1. Amount of bonuses
2. Connection between pay and performance
3. Opportunities for advancement

IT VENDOR COMPANIES

1. Opportunities for advancement
2. Connection between pay and performance
3. Opportunities for training

IT CONSULTING FIRMS

1. Opportunities for advancement
2. Connection between pay and performance
3. Amount of bonuses

IT CONTRACTING FIRMS

1. Opportunities for advancement
2. Amount of bonuses
3. Ability to discuss career goals

SOURCE ONLINE SURVEY OF 430 IT PROFESSIONALS

Surviving A Merger

To best survive a merger or acquisition, practice the following techniques

BY JEFF ZBAR

WHEN WORD came down in March 1998 that Home Savings of America was being acquired by Seattle-based Washington Mutual Inc., Ken Horner looked in the mirror to see his future. Horner realized that many of those in Home Savings' information technology organization might not find jobs at the new company.

He was a senior vice president for strategic sourcing and contracts administration, but even his job wasn't secure.

He asked himself what he offered his employer — or any employer — and what he wanted, or was willing, to do long term. He knew his skills were current and his knowledge of company systems would be an attribute to the new organization. That self-awareness helped Horner realize that his flexibility would help him win a spot with the new company.

"I tried to stay focused on the future and carve out what my future would be," says Horner, whose experience in contracts earned him a spot with the new company. "As a result of that, when I was first contacted by Washington Mutual, I was prepared and excited about the discussion."

Throughout the U.S. and around the world, mergers and acquisitions are shrinking the number of employers. But the result isn't always pink slips for the workforce — especially for those in IT.

The key to job security for the IT professional is flexibility, says Harris Miller, president of the Information Technology Association of America, an Arlington, Va.-based trade group. The ability to adapt to a new corporate culture, manager, job assignment, travel requirements, reporting routine or other business practices — even new software languages or hardware platforms — will best ensure job longevity.

Focus on Future

Rigidity was the last thing on Horner's mind in the days and weeks following word of the merger. Realizing he would essentially have to fit into a new role to earn a post in the new organization, he focused on what he had to offer. Any position offered to him likely would be defined for him, Horner surmised. He says it was how he communicated his skills to those making the assignments that ultimately won him the post as contracts manager outside the IT department, two months after the merger was announced.

"If I hadn't been able to set the organizational issues aside, I don't know that that would have presented itself," Horner says.

Horner was smart. A worker shouldn't assume management knows how employees will fit into the new structure after the merger. Telling management you are willing to assume a different post can help ensure you're considered for a new position, even if management itself isn't certain what the future of the organization will be, says Gary Cluff, president of Cluff & Associates, a Reston, Va., IT employment consultancy. That conversation should come up even before a merger is announced.

"The No. 1 problem for turnover in any organization is lack of communication," Cluff says. "Someone has to initiate that conversation. Not a once-a-year performance review, [but] almost weekly checkups."

> I tried to stay focused on the future and carve out what my future would be.
>
> KEN HORNER, WASHINGTON MUTUAL

Once a merger is announced, begin gathering intelligence, learning what systems the new company will use — and what skills you'll need to manage them. Experts advise boning up on training and certifications.

At Home Savings, many of the 600 IT workers took a company-sponsored course in dealing with change, Horner says. The company encouraged enrollment in existing IT training programs, including project-management certification. Horner took Stephen R. Covey's Seven Habits of Highly Effective People course, which he says helped ease his transition to the new company.

At Chrysler Corp.'s offices in Auburn Hills, Mich., news of the merger between the U.S. automaker and Germany's Daimler-Benz AG sent some workers scurrying to find technical training courses, says Zishakha Radia, senior manager for applications at DaimlerChrysler AG.

For Radia, training and skills management has always been important in a constantly changing IT industry. At Chrysler, training and education historically ranged from formal programs to informal lunches where workers sat and shared ideas, and from the 80 hours of required training every year to four hours of monthly "evergreening" research for managers. Regardless of training, most knew their jobs would be spared. "For the most part, the old Chrysler has always been a mean, lean, fighting machine," Radia says. "They've always had plenty of work to do."



NEWS OF THE MERGER sent some workers scurrying to find technical training courses, says Zishakha Radia, senior manager for applications at DaimlerChrysler

PETER YATES

The Bright Side

A positive outlook — about yourself and your place within the organization — can help smooth over the transition, says Paul Brinkley, director of IT strategy at Nortel Networks. Nortel has been on a mergers-and-acquisitions spurt, most recently acquiring Bay Networks Inc., a Santa Clara, Calif.-based systems company. As a senior manager focusing on IT integration and systems mergers, Brinkley knew the culture of Nortel was to retain its workers. That helped ease anxiety among Nortel employees.

After the transition period, change might ultimately come — though no decision has been made, Brinkley concedes. For now, workers are focused on migrating the companies to one standard. "There's a tremendous amount of work to do going forward," he says. "That decision will be driven by business case of customer engagement."

Many of the IT staffers at Home Savings still don't know where they'll end up, Horner says. But for him, his flexibility and the knowledge that the IT job market is wide open made him bullish about his future.

"Obviously, with the whole element of uncertainty, they were in my mind a lot," Horner says of his wife and four young children. "But I had confidence in today's world that I would be OK." ◗

Zbar is a freelance writer in Fort Lauderdale, Fla. Contact him at jeff@goinsoho.com

AT A GLANCE

Measuring Up In a Merger

Tips to increase your chances of staying on after a merger:

- **Stay current. Keep up-to-date on the latest hardware and software applications being used in your organization. Bring value to the new, combined company.**
- **Stay plugged in. Get to know management, show off your skills and be a leader. Then transition those practices to the new organization.**
- **Stay informed. Know the latest plans for the company. Avoid rumors; instead, get the most reliable information so you can plan accordingly.**
- **Be flexible and adaptable. New corporate cultures bring new expectations and habits. Expect that work hours, compensation, reporting practices, travel requirements and other facets of your job might change.**
- **Be positive. Change happens, but in an employee-friendly IT market, knowledgeable, skilled workers are at a premium.**

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JARGON JUDGE/ANNE McCRORY

Let's toss 'portal' out the window

PORTAL, PORTAL, EVERYTHING today is a "portal." We have Web portals. Corporate portals. Knowledge portals. In the beginning, portal made sense. Now that it means so many things, I miss the words it has replaced: prosaic terms like home page, Web site, intranet. So let's get rid of it!

Portal means entrance. The first Web pages to be marketed as portals were search engines — Excite, Yahoo, Lycos — which helped millions of users make sense of a seemingly limitless electronic world. They were the pages to which people set their browsers. This way, when they went online, Web users could start out with a sort of table of contents, with links to various kinds of sites and news sources. Soon, the companies added personalization features and free e-mail to keep you coming back, even after you had learned your way around.

Corporate portals came next. They're the page behind the firewall that your browser opens to when you log on to your intranet. They can combine information sources, internal and often external, to give you the information you need to do your job. In the old days (say, a few months ago), those were known as an intranet's home page, though portal proponents claim true portals offer more today — including applications — than the home pages of old.

All the other portals are some variation on that theme, their adjective tailored to match their market or the software vendor's key strength. Knowledge management vendors — those that sell in that amorphous category that has largely to do with writing everything down and enabling employees to find it — have pounced, as have the companies that make data-analysis tools. Why just Web-enable your software product when you can include a framework that lets your customers link to all their databases and pipe in information on competitors so it's there for the clicking? Let's go after some of that intranet-as-computing-platform revenue!

All Aboard

Of course, the analysts are into it now, too. Delphi Group in Boston *(www.delphigroup.com)* interviewed 300 organizations and found that 55% of them have "portal projects" under way. About a quarter, it says, see the portal as the computing platform of the future, replacing Windows-based PCs. Note that this is also known by another name: thin-client computing. (A thin client is the user's terminal. It's "thin" because it lacks storage capabilities — all the applications and documents are kept on the server.)

So as portals move from one generation to the next, they become far more than entrances — and we get into still more jargon. For instance, off the top of your head, do you know the difference between a corporate and an enterprise portal? A knowledge portal and a business intelligence portal? Is there a difference?

The danger, obviously, is keeping up with that definition, knowing that Vendor X is offering a thin-client architecture while Vendor Y offers something less ambitious, more discrete or possibly not even having much to do with the portal concept at all, beyond its trendy name. Like all parts of an evolving technology, this space is a moving target. And the word of the moment — portal — is just that. Don't get too attached to it. ◗



Does any high-tech jargon leave you steamed? Or smiling? Tell **ANNE MCCRORY**, former *Computerworld* copy desk chief and now assistant business editor. Contact her at **anne_mccrory@computerworld.com.**

CONFERENCES

SANS 99

The Eighth Annual Conference on System Administration, Networking and Security

The Hyatt Regency Inner Harbor and Baltimore Convention Center; May 7-14.

More than 60 in-depth courses and conference sessions covering security and networking issues.

Cost: $745 to $2,245. Contact: The SANS Institute at (719) 599-4303; fax: (719) 599-4395; e-mail: SANS99@sans.org; Web: *www.sans.org/sans99/register.htm*

STAR '99 EAST

Software Testing Analysis & Review

Omni Rosen Hotel, Orlando; May 10-14.

More than 40 sessions will focus on software testing and evaluation.

Cost: $1,145 to $1,745. Contact: Software Quality Engineering at (800) 423-8378 or (904) 278-0707; fax: (904) 278-4380; e-mail: sqeinfo@sqe.com; Web: *www.sqe.com.*

DB2 Solutions for Today and Beyond

Annual conference of the International DB2 Users Group

Orlando World Center Marriott; May 16-20.

Get the latest on DB2, with more than 125 in-depth sessions led by experienced DB2 users, IBM developers, consultants and vendor representatives.

Cost: $1,595. Contact: International DB2 Users Group at (312) 644-6610 or (312) 527-6777; fax: (312) 321-5158; e-mail: IDUG@sba.com; Web: *www.idug.org.*

Taking the Measure of IT Value: Building Tangible Advantage

Hotel Inter-Continental, Chicago; May 17-19.

IT research firm Meta Group Inc. offers its insights on showing the value of IT investments.

Cost: $995 (Meta Group clients); $1,495 (others). Contact: Meta Group at (800) 945-6382 or (203) 973-6785; Web: *www.metagroup.com/pemsconf.*

ProjectWorld

World Trade Center and Seaport Hotel, Boston; May 17-21.

The event focuses on project management for IT and non-IT professionals. Includes a separate program for senior project managers.

Cost: $1,795 to $1,895. Contact: ProjectWorld, c/o Imark Communications at (888) 827-6699; fax: (508) 647-0345; Web: *www.projectworld.com.*

The 1999 Performance Measurement Conference

Hitting Your Strategic Targets

New York Hilton & Towers; May 19-20; Hyatt Regency, Chicago; June 17-18.

Insights on how to assemble a measurement scorecard for your organization to measure performance and gauge customer satisfaction.

Cost: $1,275 to $1,495. Contact: The Conference Board at (212) 339-0345; fax: (212) 980-7014; Web: *www.conference-board.org.*

IT Measurement for Business Performance and Alignment Conference

Renaissance Esmerelda Resort, Palm Springs, Calif.; June 2-4.

Sponsored by Gartner Group Inc., the conference focuses on metrics and measurement techniques to help an IT organization carry out its company's business strategy.

Cost: $1,395 (Gartner Group clients); $1,595 (others). Contact: Ashley Pearce at Gartner Group, (800) 778-1997 or (203) 316-6757; fax: (800) 778-1998 or (203) 316-6774; e-mail: ashley.pearce@gartner.com; Web: *www.gartner.com/measureit.*

The AMR Research Enterprise Application Conference

The Phoenician, Scottsdale, Ariz.; June 2-4.

AMR's analysts offer insights to businesses on getting maximum benefits from enterprise applications and look at upcoming trends.

Cost: $1,295 to $1,495. Contact: AMR Research Inc. at (949) 477-5353; e-mail: info@amrresearch.com; Web: *www.amrresearch.com.*

Training Directors' Forum Conference

The Pointe Hilton Resort on South Mountain, Phoenix; June 6-9.

This event focuses on everything from skills training to knowledge management to return on investment of performance improvement.

Cost: $1,095. Contact: Training Directors' Forum Conference at (888) 200-5058 or (703) 318-0300; fax: (703) 318-7568; Web: *www.tdforum99.com.*

IT Asset Management Conference

Unlocking the Hidden Value of IT Investments

Renaissance Orlando Resort; June 7-8.

Gartner Group's take on strategies, best practice case studies and tips on buying the best equipment to build an effective IT infrastructure.

Cost: $1,395 (Gartner Group clients); $1,595 (others). Contact: Ashley Pearce at (800) 778-1997 or (203) 316-6757; fax: (800) 778-1998 or (203) 316-6774; e-mail: ashley.pearce@gartner.com; Web: *www.gartner.com/measureit.*

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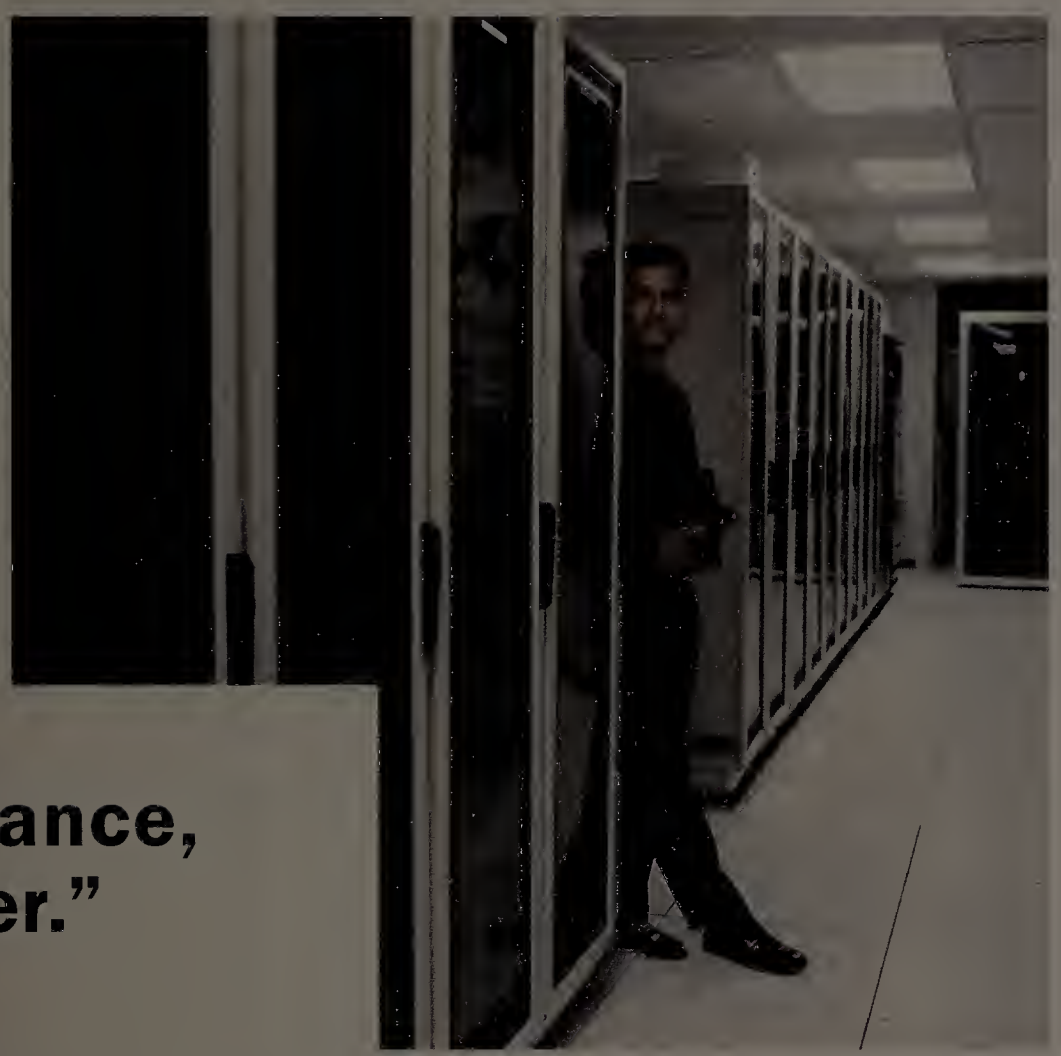




“We judge our network three ways: performance, performance. That’s why we switched to Windows



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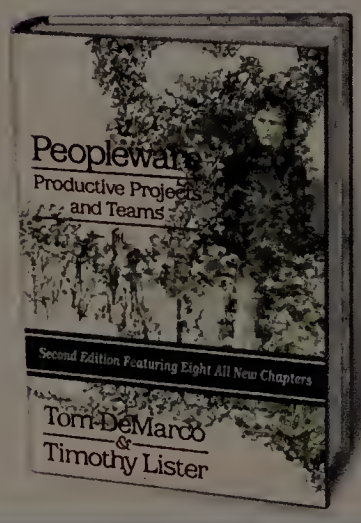
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SEEKING THE RIGHT STUFF



IT has been following management practices that usually just don't work, says author **Tom DeMarco**. In the second edition of their book *Peopleware*, DeMarco and co-author Tim Lister skewer performance reviews, process improvement and other cherished commonplaces.



Information technology managers are led astray by "management folklore that is pervasively and loudly articulated, but often wrong," **Tom DeMarco** *and Tim Lister wrote in their influential 1987 book,* Peopleware. *Said the authors: "Overtime is a waste of time; efforts to improve productivity often have an offsetting cost in increased turnover; disorder should be encouraged; phony deadlines hurt projects; bureaucracy hampers team formation; and much more."*

Now, in the second edition of Peopleware, *DeMarco and Lister have added eight chapters that skewer some of today's most cherished management practices. In an interview with* Computerworld *editor at large Gary H. Anthes, DeMarco explains why it's time for IT managers to repudiate some sacred cows — from process improvement to performance reviews to staff meetings.*

What's the main theme of your book? The major problems in our field are more likely to be sociological than technological, but managers focus on the technological because it's easier. A very common error that people make early in their management careers is to think of themselves as the chief technologist and then go on to manage by doing most of the things they did before they were managers.

Are we better at managing software projects now than when you wrote the first edition of your book? The quality of software project management is much better. There's a whole generation of people focusing on the nontechnological aspects of managing a technological effort. Companies are now giving people big, uninterrupted chunks of time to get work done. They are focusing on keeping people and realizing that building long-term loyalties is important. I'm running into many software organizations that feel good when you walk into them. They are happy shops, and people don't want to leave. That wasn't true in the mid-1970s and 1980s.

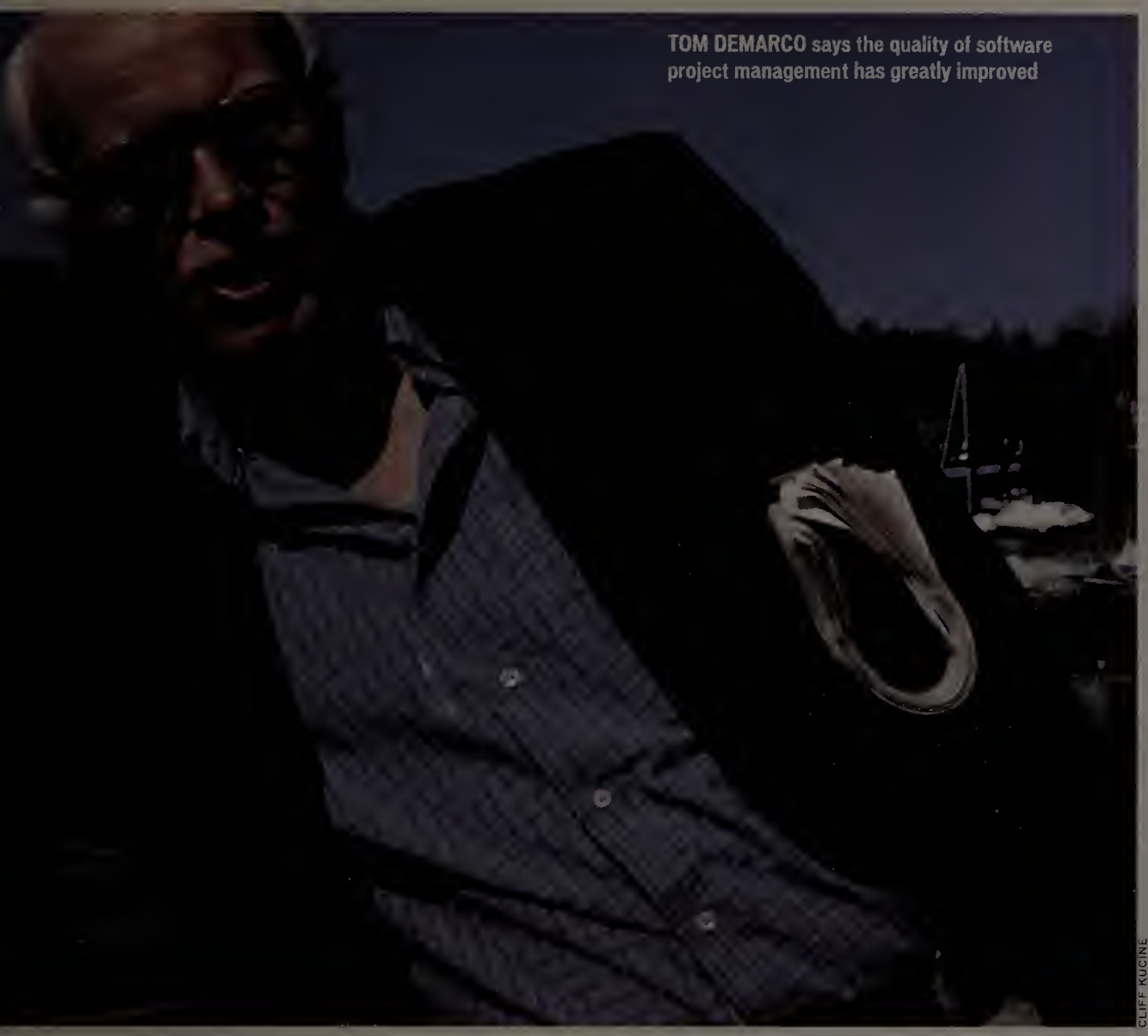
But are those shops delivering the goods? We have come of age with respect to the quantitative side of software development. A quarter to half of the companies I visit today are consistently making their deadlines. That's a big change in the past 10 years. The companies that aren't doing that haven't done their homework.

Such homework might include pursuing one of the formal process improvement programs, yet you're pretty down on that concept. People get sidetracked on that, and there's a backlash now. It's a beautiful example of the sin of young and immature managers focusing on the technological rather than the sociological. You should bring people into your organization for whom process improvement is a *personal goal* — a personal process to build skills, not an *institutional* program. Institutional process improvement is someone looking over your shoulder and trying to mandate a uniform program. That's typically simplistic.

You also suggest that adopting a formal process improvement program such as the Software Engineering Institute's Capability Maturity Model for Software makes IT organizations too risk-averse. IT people say, 'I'm under the gun to demonstrate process improvement. Is this project in my interest? Maybe I'd be better off to put this in the backlog and do an easier one.' Process improvement is angling to become an end in itself, so when it gets to picking projects, you pick the easy ones.

You also suggest that this risk-avoidance leads to a lack of rigor in justifying projects. There's a disinclination to do a real return-on-investment on a project. If [the IT manager] says, 'Every day I have this system I get $60,000 worth of benefit,' he's exposing himself to failure. So companies are more and more falling into the habit of justifying systems with very vague generalities such as 'future growth requires it, competitive assessment, the market window' — in other words, hand waving. You may choose projects that are worth much less than the ones you don't choose.

You also say that some extremely widespread management practices such as performance reviews, rewards for good performance and management by objectives, can be 'teamicidal' – that is, they can destroy teams. You are making people competitive with the very people they have to cooperate with. I'm not saying you should never do these things, only that you should realize you may do some damage to the team. One company I knew back in the 1980s gave Green Stamps for finishing a project on time. These things are the mark of a



TOM DEMARCO says the quality of software project management has greatly improved

CLIFF KUCINE

manager who hasn't got a clue. Rewards and awards are a sign of managerial incompetence.

But what's wrong with a little intrateam competition? It makes coaching difficult or impossible. The only meaningful coaching that goes on is at peer levels. The notion that the manager can coach his or her employees is an old-fashioned one. Peer coaching can only happen if everybody feels safe, and safety requires a very low level of competition among team members.

So if institutional process improvement is out, and the standard evaluation and reward mechanisms are out, what should the IT manager be doing? Hiring great people, forming good teams, motivating people to be in a continual self-improvement track. Why does a good team form in one organization but not another? It's because of something good you did as a manager. You have to realize that no formulaic, simplistic answer is going to work. You have to have your antenna out all the time, you have to care, you have to lead with your heart, you have to be a manager.

You say that organizational learning doesn't occur at the top or the bottom of an organization, but at the middle. Yet you say at most companies middle managers are too 'isolated, embattled and fearful' to work together in effective teams. What's the solution? Learning only happens at the peer level — peers who have an interest in helping each other along. Teams establish an environment in which learning can happen. And a team becomes a team because they have common ownership of something. Common purpose is absolutely essential, and it's an act of leadership to establish common purpose. Without that, it's all hand waving, all talk: 'You ought to be a team.'

Can you give an example? A group of middle managers, by an act of top management, gets common ownership of some projects. Top management says, 'You three managers are responsible for the successful scheduling of these three projects.' The performance against those schedules then belongs to those three managers together.

You're also pretty negative on meetings. A meeting is often not a meeting but a ceremony. People interact with the boss, not with each other, because they have no common purpose, no common ownership of anything. If you're the boss, and 10 people work for you, and you bring them in once a week and they take turns interacting with you, it's possible the purpose of this ceremony is to establish and re-establish your 'bosship.' That's a big price to pay for your insecurities.

You say that as many as 90% of all software projects suffer from 'early overstaffing' – that is, people are assigned before they can be effectively used – in a misguided effort to meet a difficult deadline. What's the consequence of that? You short-circuit the design activity, which can only be done by a small number of people. You do a quick and dirty design in order to give all those people something to work on. This happens in companies where the illusion of progress and control are more important than real progress and control. It's a pathological mechanism where a goal is set and it becomes difficult to jettison it early. With the most optimistic plan, you have to catch a break here, there and everywhere. In organizations where that's the only plan that's allowed to be articulated, you can't do anything sensible in the way of long-term risk mitigation and optimization because you don't have time to do it.

The second edition of your book includes a new chapter on the importance of the company as a community for its employees. What led to that? There was a big insight for me that led to that chapter. To an ever increasing degree, the towns where we live are not satisfying the need for community any more. Our towns have become less relevant. We spend most of our day, and most of our passions, 40 miles from where we sleep, and in many cases we don't know our neighbors. People are coming to look for community in their workplace. Some satisfy the need, and some don't.

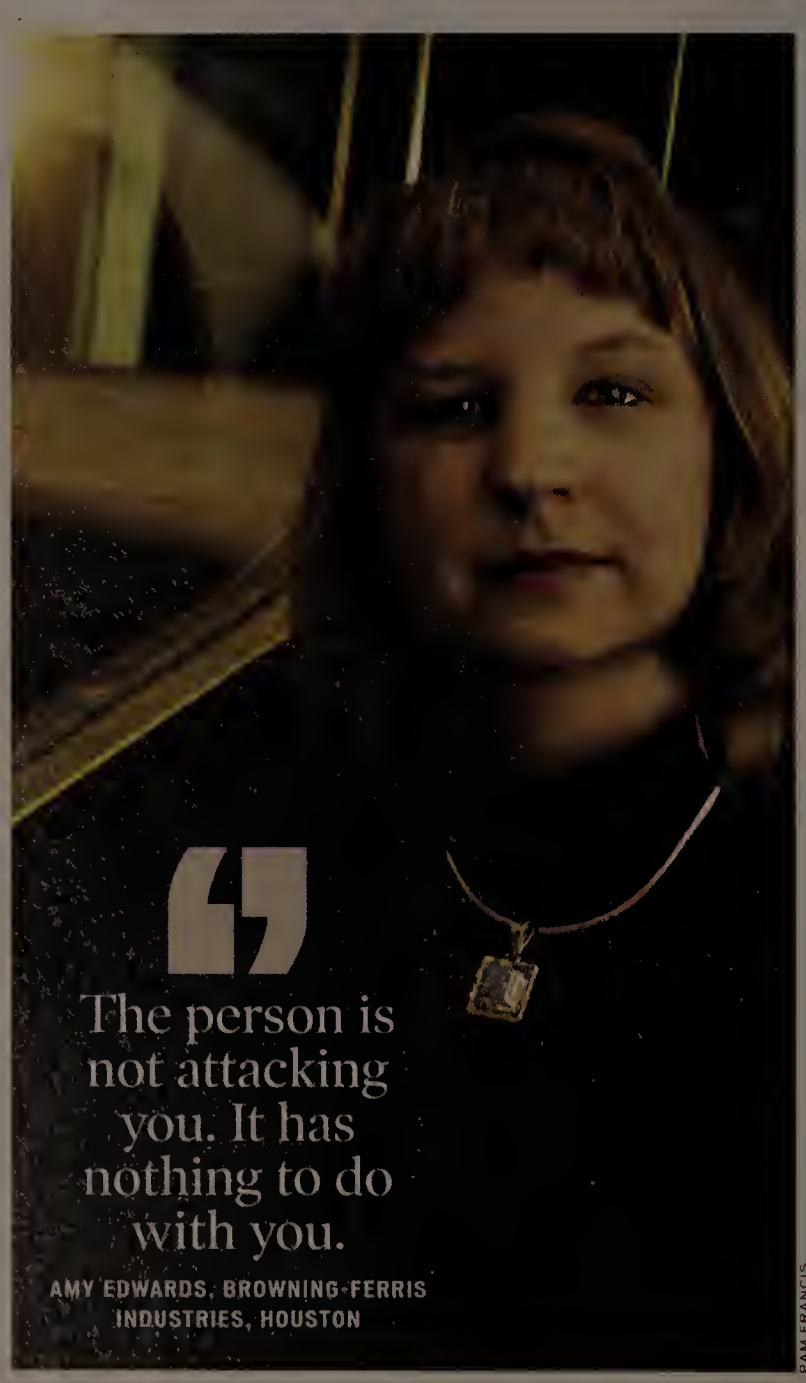
How do you do that? You have to build a company where people want to stay. You can't have a community populated by transients. You also have to relax control. You build a sense of permanence and belonging by letting people make their own mistakes, by letting people own the product. Distribute ownership — let it land where it may. ◗

Contact Anthes at gary_anthes@computerworld.com.

> The major problems in our field are more likely to be sociological than technological, but managers focus on the technological because it's easier.
>
> TOM DEMARCO
> CO-AUTHOR, *PEOPLEWARE*

Hell hath no fury like angry end users. Here's how the help desk survives . . .

RAGING USERS



PAM FRANCIS

BY KATHLEEN MELYMUKA

"WHEN I'D BEEN on the desk about three months, I got this caller, Joe. People are afraid of Joe because he huffs and puffs and blows the house down," says Amy Edwards, who's now manager of the computer support center at Browning-Ferris Industries Inc., a trash management company in Houston. "I said I'd have to find out the answer and call him back. He said, 'You're just an idiot! Don't they have anyone who knows anything?' "

Verbal abuse is just one example of user rage. In a recent survey by Concord Communications Inc. in Marlboro, Mass., 83% of network managers reported that users had trashed keyboards, shattered monitors, smashed mice and kicked in hard drives.

Clearly, people are angry, and help desk analysts bear the brunt of it. It takes special people and special strategies to survive — let alone succeed. Here's how they manage.

Walk in Their Shoes

The No. 1 job requirement is empathy. "A little empathy goes a long way," says Marie DiRuzza, help desk supervisor at Worcester Polytechnic Institute in Worcester, Mass. "You try to relate to the problems — understand why this is an emergency for them."

Resist the temptation to mix it up with a ranting caller. "Don't fight back, don't match wits, don't give a 'smart' reply and don't take on his tone of voice," says Eric Rabinowitz, president of IHS Helpdesk Service, a New York provider of staffing services.

But don't wear a "kick me" sign, either. "You shouldn't have to take abuse or bad language," Edwards says. "If a person just wants to yell, I tell people to transfer him to me."

Richard Dorko, lead desktop services analyst at Gannett Co. in Arlington, Va., has his chief strategy posted in his office: "Feel/Self/Found." It means, "I know how you feel, I've felt the same way myself and this is what I found."

"It takes you from a confrontational face-to-face with someone and puts you alongside them, working together to solve the problem," he says.

> Don't fight back, don't match wits, don't give a 'smart' reply and don't take on his tone of voice.
>
> ERIC RABINOWITZ, PRESIDENT, IHS HELPDESK SERVICE

Listen

The best way to defuse explosive users is to let them vent. "If they're frustrated, we listen to them," says Mike Mercer, manager of the central support desk at Southwest Airlines Co. in Dallas. "In the scheme of things, it may be a small problem, but to them, it's the only problem."

Show users you understand. "We repeat key words to them so they know we are truly comprehending what they're talking about," Mercer says.

Gear your response to the caller's level of knowledge, says John Hamilton, managing director at Ziff-Davis Service and Support Consultants in San Diego. Don't talk down to a customer, and don't try to fake what you don't know. Find someone who's qualified to talk with the caller.

But don't make it seem like you're passing the buck. "People get mad if they've gotten the runaround," Edwards says.

When you do have to pass problems to someone else, keep customers in the loop and manage their expectations. For a complex problem, Mercer tells the customer what the next steps are and when the problem should be fixed. He then issues a "trouble ticket," which documents and tracks the problem much like Federal Express Corp. tracks packages. "Anybody at Southwest who has a trouble ticket can call us, and we can tell them who has [the problem] and what's been done on it," he says.

But whether you keep the problem or pass it on, take responsibility, Edwards says. "They want someone to say, 'I am so sorry that happened to you, and I will take care of it.' "

Then do it. Solve the business problem immediately, even if you can't solve the technical problem that fast. "If a printer won't print, we can give them permission to print to the office next door," DiRuzza says. "It may be inconvenient, but they can do what they need to do, and that buys you time."

No Red Flags

When customers are feeling better, avoid emotional trigger words that can rile them up again: We can't . . . We won't . . . The policy of our company is not to . . . I'm not authorized . . . It's not my job . . . I don't have time . . . Calm down . . . You don't seem to understand . . . Just a second . . . Hold on . . . Never . . . No. "It's amazing how often you hear support people use those and get the customer all steamed up again," Rabinowitz says.

Even a negative message can be given in a positive way, he says. Don't say, "We can't do that." Say, "Here's what we can do." Get the user to buy in to the solution. "If there is more than one answer, offer alternatives," Rabinowitz says. "People feel irate when they've lost control. Offering them choices makes them feel they have not lost control."

Survival Guide

Finally, protect your job as well as your psyche. "Document everything, all interaction with the customer, so you have precise information on how the situation was dealt with," Dorko says.

But remember, Edwards says, "The person is not attacking you. It has nothing to do with you." That's one of many lessons she has learned from eight years on the help desk. These days, when Joe calls, he no longer huffs and puffs. "Just recently, he said, 'You saved my life,' " Edwards recalls. "So I went from an idiot to someone who knows it all. It's a tough job, but you can turn a customer around if you don't let it get you down." ◗

Melymuka is Computerworld's *senior editor, management. Contact her at kathleen_melymuka@computerworld.com*

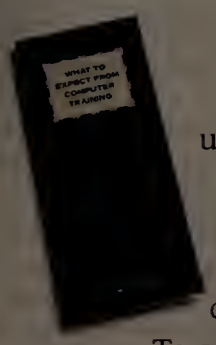
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Dear Career Adviser:

My question: Do you think a Certified NetWare Engineer (CNE) certification is losing its appeal to prospective employers? I recently obtained my CNE certification, and I'm not so sure if this is enough to start a new career as a network engineer or administrator. I plan on getting my Microsoft Certified Engineer [MSCE] and Cisco Router certifications as well. I feel I spent a lot of time and money learning an unappealing skill, with so many companies migrating to NT. — NOT SURE ABOUT MY CNE

Dear Not Sure:

You might be right. "Three years ago, the world was Novell," says Betsy Kmiecik, director of human resources at ValCom, a systems integration firm in Chicago. But that may have changed now because the push to Windows NT apparently makes MSCEs even more valuable than Novell folks. And don't rule out Cisco! For year 2000 work, those are also hot credentials, says John Hennessy, a recruiter based in Chicago.

Certifications aside, it's really your practical experience that will sell your work. "You must show you can problem-solve in the real world," says Pamela Norris, a CNE-certified project manager at Kraft, Kenneddy and Lesser, a consulting services firm for the legal industry. Simply having a credential isn't enough. If you're interested in certification resources, be sure to check out *Computerworld*'s Feb. 2 article, "Finding Training on the Web." Also try Wayne's Comprehensive Computer Professional Certification Resource (*www.diac.com/~wlin/cpcert.html*) on the Web.

Dear Career Adviser:

I have been in IT for over 21 years, starting as a programmer and working my way up to CIO. Frankly, after 15 years, the top spot just isn't fun any more. Between the politics and never-ending meetings, I want to make a change back to something I really enjoy.

I have up-to-date technical skills and think I can make the same amount of money by moving into consulting or project management for larger companies. As I look for a job at these levels, how will I be perceived? How should I pursue this kind of change? Will a premier consulting firm be interested in me, and how should I repackage myself and my résumé? — NO FUN ANYMORE

Dear No Fun:

The key is to present yourself as someone who has delivered a highly valued application or environment to the enterprise and has been there for at least three years (to show stability), advises Thornton May, vice president of research and education at Cambridge Technology Partners Inc. in Cambridge, Mass., who speaks to about 600 CIOs a year. And put yourself into shared spaces where CIOs, high-level executives and consultants intermingle.



FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at www.computerworld.com/career_adviser.

Then, check out the Cambridge Information Network Web site (*www.cin.ctp.com*), where 2,700 member CIOs frequent interactive forums. Expand your network by enrolling in advanced-management programs such as Harvard Business School's Delivering Information Systems (*www.exed.hbs.edu/programs/dis/index.html*), UCLA's Managing the Information Resource Program (*www.anderson.ucla.edu/programs/oee/welcome.html*) and the Advanced Management Program at University of California at Berkeley's Haas Business School (*www.haas.berkeley.edu/bced/bepintro.html*).

Also, carefully follow May's advice about your résumé and how to repackage yourself: Present yourself not as someone fleeing a bad situation but as a person moving to something he wants.

Dear Career Adviser:

I hold a bachelor's, master's and Ph.D., all in computer science. I finished my Ph.D. two and a half years ago and have been teaching since then. Should I switch to [the IT] industry, since that's where the action is? And if so, how? I am very well-trained in the basics of computer science and know C, C++ and Unix, but I lack specific experience in packages like PeopleSoft or SAP. What are my career options? — EDU FOR NOW

Dear Edu:

A particular package may pay big bucks right now, but is this your best fit? Remember: With your brain power, you might better target companies pushing the envelope in new-product development rather than seek to join an organization that wants someone with expertise in specific packages.

Visit your local library and look at The Gale Group's publications (*www.gale.com*) to find companies in the technologies you particularly like, advises Ed Meyer, a Stanford University Ph.D. and technical consultant in Silicon Valley.

In job interviews, emphasize not just your technology skills but your people skills and ability to meet business deadlines. If you can only work solo, you might not be happy being part of, leading or managing a team.

Next, address the question of deadlines. Can you live with realistic development goals, or do you have to have a totally perfect product before you release it? Above all, think realistically. If an interviewer focuses only on your ability to learn a specific package, that's probably not the right place for you.

Chicago-based recruiter Joe Dawson confirms that expertise in any one package might be less useful to your career and mind-set because that particular application might be on its way out by the time you're up to speed on it.

The big bucks aside, focus on those technology-rich environments that are more in tune with your core skills and desires. ◗

WORKSTYLE BRIEFS

What It's Like to Work at . . . Some Hot Shops

So you've thought about making the switch from corporate IT to working at a hot, high-tech company. Oracle Corp., maybe, or Intel Corp.– or even a slick Web outfit. But what's it really like to work at a company whose main product is technology? Browse on over to WetFeet.com to find out. That publisher has investigated the workplaces of dozens of firms, among them a good number of technology's biggest players.

The site offers some basic information for free, but the more-detailed stuff comes in profiles that run 30 to 70 pages and cost about $25 per profile.

The following are some excerpts:

Amazon.com Inc.

Culture: Dynamic, messy, non-hierarchical, workaholic and young.
Dress code: None.
Environment: Things move fast and employees have to be able to deal with change.

"There's definitely a professional manner here, but there is something about the departments that make people laid-back – even though they're working like dogs," says an insider at the Seattle-based company.

America Online Inc.

Facility: Campus in Dulles, Va., has its own Starbucks, fitness/workout rooms, company store and dry cleaning services.
Atmosphere: Very casual.
Work environment: Drive and passion combined with a sense of humor and the ability to exist on fast food and little sleep.
Turnover: In the single digits.
Key job skills: In the technology group, experience and interest in developing emerging technologies, flexibility and the ability to communicate effectively. Projects may be launched today and killed tomorrow.
Downsides: There never seems to be enough time to get everything done, so employees must take responsibility for striking a balance between their work and personal commitments. People looking for a lot of structure should look elsewhere.

Intel Corp.

Comment: "Intel has the attitude of a winner," says a company insider. "Working there, you kind of feel like you're part of something special."
Work environment: Employees work on cutting-edge technology projects but may find it frustrating to coordinate as many as several hundred team members. Projects change rapidly, which presents constant challenges.

PeopleSoft Inc.

Culture: Egalitarian and down to earth, with a "go-team" atmosphere. Many insiders at the Pleasanton, Calif., company say their managers are like mentors to them.
Downsides: Some are disappointed by the chaos accompanying PeopleSoft's fast growth. "[My bosses] don't know what I'm doing. There's no system of checks and balances," one employee says. Others mention the low pay as a negative.
Turnover: About 8%.

– *Anne McCrory*

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TECHNOLOGY

A YENTA FOR USERS

A new and free online collaboration tool called Yenta helps users find people with similar interests without sacrificing their privacy or security. British Telecom has already rolled it out to 500 users and others are in the evaluation stage. ▸ 71

TOOLS BEEF UP VPN SECURITY

Users of virtual private networks worry about their security, reliability and scalability. But new firewall add-ons planned by Check Point Software Technology may ease those concerns. ▸ 81

FRANKLY SPEAKING

Sick of politely waiting for Sun to improve Java's performance, IBM, Novell and HP prep their own engines. Will that destroy the cross-platform promise of Java? Nah, Frank Hayes writes — the competition will be a big win for IT. ▸ 89

ROOM SERVICE? GET ME THE WEB

Combining Web access with voice traffic over phone lines is still a dream in many IT organizations, but a hotel is beta-testing hardware and software that would do exactly that. The goals: Cut Web access costs for guests and boost revenue for hotels. ▸ 81

MOBILE REVIEWS: SONY, GATEWAY

Sony's Vaio C1 Picturebook is a small, light subnotebook that can run Windows 98 and has a built-in camera. The downsides to this $2,299, 2.5-lb. bundle? A teeny-weeny keyboard, a display that may be a bit cramped for Web browsing and proprietary connectors. ▸ 72

Our reviewer fell in love with Gateway's Solo 3150XL. Code-named FireAnt, it's a small, high-performance notebook with a superior keyboard and a 366-MHz Pentium II. The only drawbacks: A screen that's limited to SVGA resolution and a floppy drive that's external. ▸ 76

QUICKSTUDY: GIS

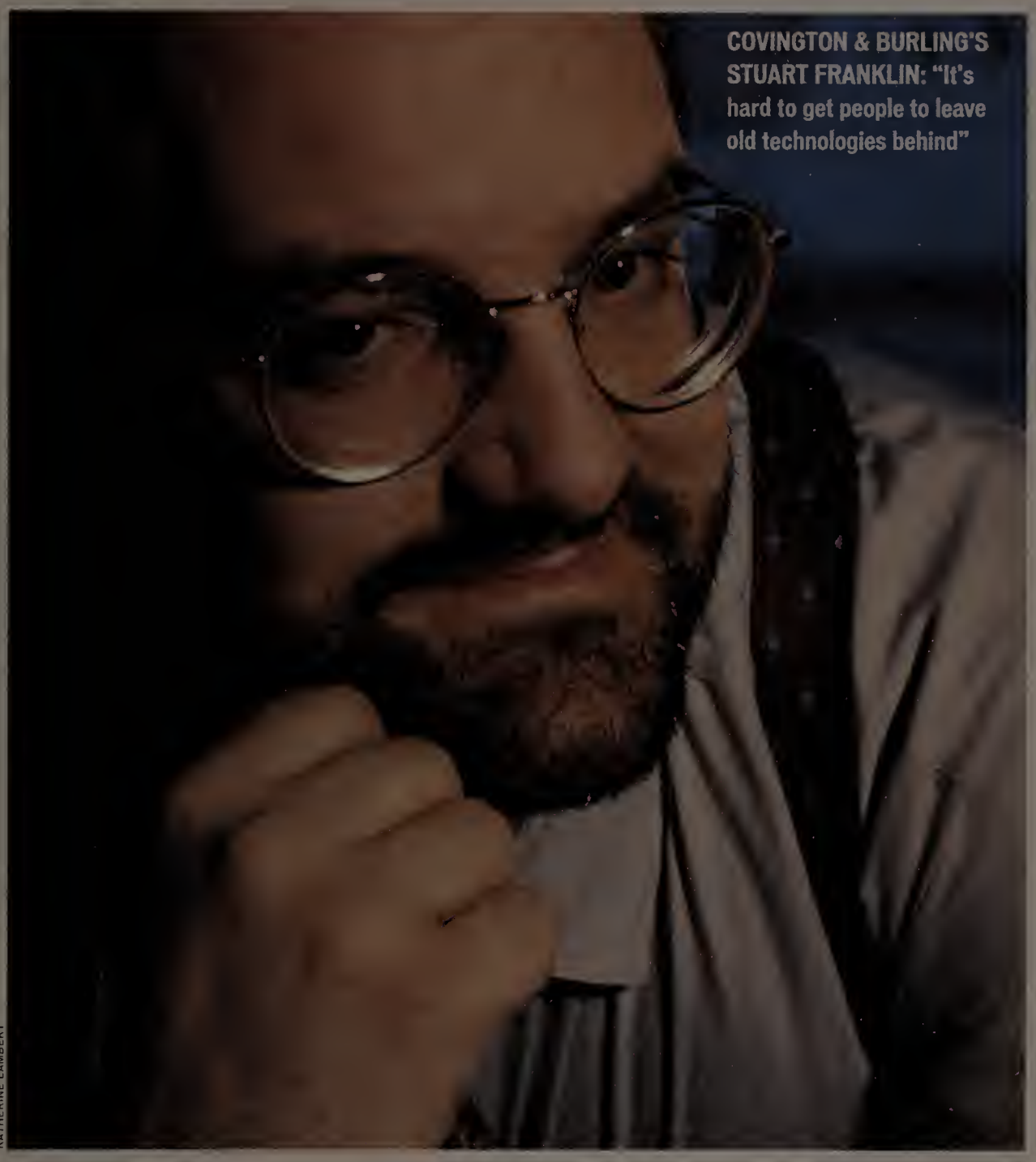
Geographic Information Systems are more than mapping software. They can also use demographics to figure out the best location for a new store or determine the shortest route for an emergency response team. ▸ 90

FLASHBACK: IBM S/360

IBM's 1964 release of the S/360 was a mixed blessing. The first family of compatible machines made computing more simple — and, paradoxically, more complex. ▸ 96

MORE

Exec Tech 84
Hardware 72, 76
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COVINGTON & BURLING'S STUART FRANKLIN: "It's hard to get people to leave old technologies behind"

KATHERINE LAMBERT

TAMING THE DESKTOP

YES, THERE ARE WAYS to make desktops more reliable. The answer may lie in network computer technology or in a straitjacket approach to centralized client management. What appears to be impossible is being tried at some companies. *Computerworld* examines how three IT groups are taking very different approaches to reach the same goal: creating desktops that work 24 hours a day, seven days a week.

92

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IDG

NOTEBOOK EXTREMES

Hefty or thin, the choice is yours. Key battles in notebook market are happening at opposite ends of spectrum. Page 81

THAT'S THE WAY IT WAS

How technology helped newsman Walter Cronkite predict a landslide in the 1952 presidential election. Page 86

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Y2K MAY STALL WINDOWS 2000

Analysts pessimistic; many expect mid-2000 shipment for Microsoft operating system

BY SHARON GAUDIN

A growing number of analysts are warning users not to expect delivery of Windows 2000 before the middle of next year.

That's at least six months after the delivery date pinpointed last week by Ed Muth, Microsoft Corp.'s group product manager for Windows NT. And the delivery date Muth targeted in his statement — which came on the heels of a confirmed one-month delay in the release of the third beta of the updated operating system — is later than what Microsoft had predicted. In a statement last year, it pegged mid-1999 for the final release of Windows 2000.

Aside from any Microsoft issues, the major culprit behind analysts' prediction of a delay is the year 2000 problem and related system freezes that are expected to go into effect in the second and third quarters at many user companies.

"Based on Microsoft's history and the events coming up this year, like Y2K, I don't see them coming out

Windows 2000, page 16

JUST THE FACTS

Ripple Effect

Applications that could be affected by a Windows 2000 delay

- Office 2000
- The BackOffice suite, including updates for:
  - SQL Server
  - Exchange Server
  - Back Office Server

Chris Vick ... ell, a deputy CIO for the city of Indianapolis, ... to be a ... for ...

NO PANACEA

Farming out the headaches of the help desk to a contractor is a fast-growing trend — and it seems like such a great idea. But as national correspondent Julia King reports, CIOs are learning that a bad outsourcing deal just creates an endless loop of finger-pointing and frustrated users who can't get their technical problems solved. The upshot: Some companies are dumping their outsourcer for poor performance, bringing the help desk back in-house or renegotiating the contract to get service-level agreements.

HELP DESK OUTSOURCING

As one analyst put it, "Broken help desk processes and problems aren't going to be magically fixed by outsourcing." *See page 24.*

PORTALS LINK BUYERS, SELLERS

Web marketplaces cut costs, speed purchasing

BY CAROL SLIWA AND SHARON MACHLIS

Got cows?

Business users can now buy everything, be it cows, chemicals, electronic parts or paper, through Web portals designed to help them find goods and compare suppliers' prices in specific vertical industries.

Users say this emerging business-to-business purchase process will make transactions faster, simpler and potentially more cost effective.

Take electronics components. Robert Child, director of corporate purchasing at EFTC Corp., an 1,800-employee electronics maker in Denver, said it might take two or three days and 10 or 20 calls just to locate

Portals, page 16

COMPAQ NEEDS ENTERPRISE VISION

Hurdles: User retention, product integration

BY JAIKUMAR VIJAYAN AND APRIL JACOBS

It has talked the talk. But can it walk the walk?

One year after stunning the industry with its bid to buy Digital Equipment Corp. — and seven months after the deal went through — Compaq Computer Corp. has made great strides in its bid to be perceived as an enterprise player. But that hasn't meant security for the company's enterprise users.

Compaq has promised users that it will make OpenVMS, Alpha and Digital Unix its high-end platforms of choice. But the Wintel-centric company — which purchased Digital primarily for its service capabilities — has yet to explain how it plans to do that while integrating its now broad family of technologies into a long-term enterprise strategy.

Compaq, page 103



COMPAQ CEO Eckhard Pfeiffer could be in trouble, analysts say, if product revenue slows down. Quarterly results are expected this week

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ORACLE ERP USERS FACE MOVE TO WEB-ONLY APPS

Early adopters face technical, training challenges

BY CRAIG STEDMAN

EARLY ADOPTERS of Oracle Corp.'s Web-oriented ERP software, which was released last summer, are finding both payoffs and technical challenges.

Those experiences should be a hot topic of discussion at the independent Oracle Applications Users Group's spring conference in San Diego this week for a simple reason: Oracle is phasing out the character-mode and Windows-based versions of its enterprise resource planning (ERP) software — so everyone will eventually have to switch.

For users who already installed Oracle's Web-only Release 11 software or are about to go live, its big draw is a graphical user interface that needs minimal desktop support and is supposed to avoid the wide-area network bottlenecks that hit Oracle's client/server applications.

But setting up and tuning ERP systems that tie Web browsers to corporate databases via middle-tier application servers can be a complex undertaking. And end users may need lots of training, especially at the many companies that still run Oracle's character-mode applications, users said.

For example, training is a big issue at Tempe, Ariz.-based Rockford Corp., an audio-equipment maker that's scheduled to complete an upgrade to Release 11 on May 1.

The browser-based applications should be snazzier and more flexible for workers without forcing Rockford to install Windows clients at each PC, said David Richards, vice president of information technology at the company.



REED RAHN

ROCKFORD'S DAVID RICHARDS says Oracle's Web-only Release 11 is "a major change" because "the user interface is very different"

Most of the 150 Rockford employees who use the Oracle system now work in character mode. For them, Release 11 "is a major change," Richards said. "The user interface is very different."

To try to minimize any drop in productivity, Rockford early last month began setting aside up to an hour each day for end users to practice navigating their way through Release 11, Richards said.

At AirTouch Communications Inc., it took users up to three months to get comfortable with Release 11 after an upgrade was completed in October, said Carl Eberling, director of ERP systems at the San Francisco-based cellular telephone company.

Tuning the Web-based setup — which unified six Oracle financial systems into one big installation — also took time. Even now, Eberling is "still trying to get people to run big finance jobs at night instead of kicking them off at 8 in the morning, when there's 600 people on the system," he said.

For The Christian Science Publishing Society, which plans to go live with a Release 11 upgrade this week, preparing end users wasn't a big deal because they already had Oracle's Windows client, said Ray Wallett, applications project manager at the Boston-based newspaper publisher.

But putting together the Web-based systems needed to run Release 11 took the society's IT staff to "a whole new level" of technical complexity, Wallett said. "This is more complicated than doing the original [Oracle] installation was."

Nearly 100 companies have installed Release 11, said Ron Wohl, senior vice president of applications development at Oracle.

More will have to come: Oracle plans to stop supporting its character-mode applications at the end of next year, although a date for phasing out its client/server support hasn't been set, Wohl said. ◗

Web-Oriented ERP Offerings On the Increase

Oracle got some thin-client company last week when QAD Inc. released an upgrade of its manufacturing applications with a browser-based user interface.

Like Oracle, Carpinteria, Calif.-based QAD had trouble getting its client/server software to run smoothly on wide-area networks. That forced users to stick with character-mode screens or to put QAD's Windows client on an application server that end users could access via PC emulation software.

For example, Genzyme Corp., a biotechnology firm in Cambridge, Mass., stayed away from QAD's fat-client releases to avoid straining its network and its technical support staff.

The Web-based user interface looks like a much better alternative to the green-screen version of the software that Genzyme uses now, said CIO Robert Cowie.

Genzyme hopes to upgrade to Version 9.0 of QAD's Mfg/Pro applications late this year or in early 2000, Cowie said. But it may still leave the character-mode screens in place for some heavy-duty data entry jobs, he added.

"We wouldn't want to take a productivity hit just to make the screens look pretty," he said.

– *Craig Stedman*

Browser Delays Leave Corporate Users in Lurch

BY CAROL SLIWA

Corporate users who want a fully standards-compliant browser will have to bide their time a while longer.

Microsoft Corp.'s new Internet Explorer 5.0, released last month, doesn't provide 100% support for several key Internet standards (see chart), and Netscape Communications Corp.'s currently available product, Navigator 4.5, is even worse, according to a group that tracks the issue.

Netscape's upcoming Navigator 5.0 promises to improve the situation with a new, faster browser engine that the company claims will fully support Web standards. But it's unclear when it will ship. The beta isn't due until summer, and company officials have refused to commit to a ship date for the final version.

Some of the reasons for the delay emerged recently when a ringleader of Netscape's much-discussed open-source browser effort, Jamie Zawinski, resigned from the company March 31. Zawinski said the open-source project known as Mozilla.org — which allows developers free access to innovate and improve the browser code — had become "too depressing and too painful" for him to continue working on.

AT A GLANCE

Unexplored

The Web Standards Project says Internet Explorer 5.0 shortfalls include:

Cascading Style Sheets 1.0: Page layouts aren't always displayed correctly. Microsoft introduced nonstandard extensions.

Document Object Model 1.0: Some properties of documents and elements don't work correctly or are missing entirely.

Extensible Markup Language (XML) 1.0: Has bugs in basic interpretation; more serious problems with XML Namespaces.

Extensible Style Language: Includes keywords and syntax that don't appear in the World Wide Web Consortium's draft.

Mitchell Baker, who manages the Mozilla.org project at Netscape, which was recently acquired by America Online Inc., insisted that the project hasn't been a failure and that the move to open source hasn't slowed Navigator 5.0's development.

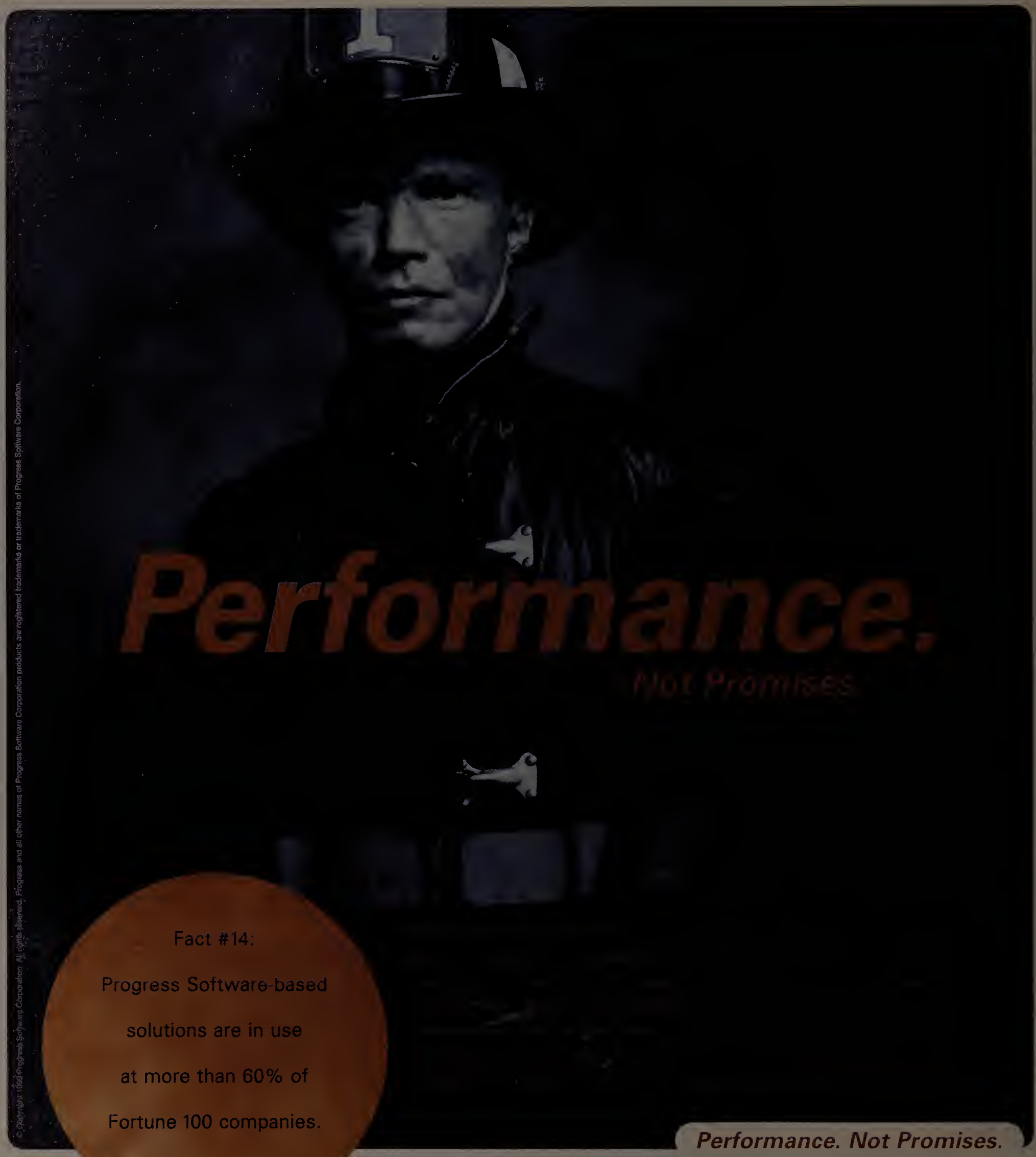
Customers, however, had thought they might have a new browser by now.

"We expected it would be out some time around now," said Rick Waugh, a systems analyst at BCT.Telus Inc., a telecommunications provider in Burnaby, British Columbia.

BCT.Telus doesn't want to build a standards-based application only to find that it won't work with the browser, Waugh said. The browser makers "are causing a lot of people pain, as they basically have to fumble through building those applications," he said.

The Web Standards Project, a nonprofit watchdog group that claims to have more than 9,000 members, earlier this month renewed its complaint that Internet Explorer 5.0 has problems meeting several standards, including the Internet programming language HTML 4.0, Extensible Markup Language 1.0, Cascading Style Sheets 1.0 and Document Object Model 1.0.

Microsoft group product manager Rob Bennett acknowledged some problems in standards support, conceding that the company has work to do. ◗



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EARLY ADOPTERS: OFFICE 2000 AN EASIER ENTERPRISE INSTALL

But suite's intranet features dig deeper into corporate networks

BY DAVID ORENSTEIN

ENTERPRISE installation of Microsoft Corp.'s Office 2000 is easier to execute than in past versions, two of the earliest adopters said — but only if the proper groundwork is laid.

"Know where you want to go," advised Andrew Drooker, director of infrastructure and technology at Atlanta-based Turner Broadcasting Sales, which sells advertising for Time Warner Inc.-owned cable networks such as Cable News Network.

One of the biggest installation issues centers on integrating Office 2000 into an intranet. That's because the new version adds several intranet-publishing and collaboration features.

To get the most out of those features, end users should know how to use the intranet, and the intranet should be well-established, users and analysts said.

Crash Course

"If [firms] aren't sophisticated at the beginning [of integrating Office], they will be at the end," said Rob Enderle, an analyst at Giga Information Group Inc. in Cambridge, Mass.

> If [firms] aren't sophisticated at the beginning [of integrating Office], they will be at the end.
>
> ROB ENDERLE, GIGA INFORMATION GROUP

Wizards and other guides, partly developed during Microsoft's 26-company early-adopter testing program, automate Office 2000 installation.

But in the background, the suite digs into a company's network more than previous versions of Office did. That means Office 2000 can cause more problems for users and administrators, said Ashim Pal, an analyst at Meta Group Inc. in Stamford, Conn.

Office 2000's wizards link client PCs to their new Web server folders, install server extensions to enable discussion groups and other collaboration tools, and update Windows NT-based access privileges.

At Turner Broadcasting Sales, the Office 2000 installation tools let Drooker provide custom configurations for each department, which he couldn't do with Office 97.

Before integrating Office into his intranet, Drooker said, he mapped out the new folders and access privileges to ensure that the custom work environments he provided to end users were ones that the company's information technology department would be able to manage.

Plan Well

Pal recommended that users deploy Office 2000 this year only to end users with the greatest need.

Companies shouldn't give end users intranet publishing capabilities without having clear, enforceable standards first, he added. Finally, client PCs should be standardized to keep the number of custom installations under control, he said.

Lockheed Martin Corp.'s electronics and missiles division in Orlando kept Office 2000 deployment simple by limiting configurations to one for powerful PCs and one for older ones, said MIS manager Don Jones.

Lockheed first tested Office 2000 by rolling it out to a sampling of about 150 desktops. Because the clients are standardized Dell PCs, Jones said, the sampling could represent the whole enterprise.

Both Turner and the Lockheed division are early-adopter program members.

In exchange for early access to Office 2000 and to on-site technical support, the companies gave Microsoft feedback about the installation process. Office 2000 is scheduled to ship by next month.



ANN STATES

TURNER'S ANDREW DROOKER says Office 2000 let him provide custom configurations for each department

Yenta Matches Users With Same Interests

Tool combines collaboration and privacy via encrypted analysis of e-mail and files

BY ANN HARRISON

A recently released free software tool called Yenta helps users securely locate potential collaborators and swap information.

"I'm trying to change the way people design systems which handle personal information," said Lenny Foner, who developed Yenta as part of his doctoral thesis at the MIT Media Lab. "People are too dependent on centralized systems, which have technical flaws that are too easy to compromise."

Yenta (Yiddish for *matchmaker*) analyzes words that appear in a user's e-mail and files. It then determines the user's interests, summarizes them in a series of keywords and asks the user for a pseudonym. When the user is connected to the Internet, his Yenta contacts other Yentas or clusters of Yentas to see if their users are interested in those topics.

Yentas don't send mail or files to other Yentas but simply determine the user's interests and store that information. When Yentas trade information, they preserve user anonymity and privacy by mixing keywords of many users.

When keywords are matched by two Yentas, that communication is encrypted with a 128-bit cryptographic key. Communication with a user's own Yenta, via a Web browser, is encrypted using Secure Sockets Layer, as is the user information on the desktop. When a Yenta notifies a user of an interest match, that user can contact the other person's Yenta via a built-in Internet messaging system.

British Telecommunications PLC (BT) in Ipswich, England, a Media Lab sponsor, wrote its own implementation of Yenta using a centralized server. Instead of scanning e-mail or files, BT's system asks users to check off a list of interests.

Barry Crabtree, an engineering adviser at BT, said the system is being used by 500 employees. An external version links the utility to its customers.

John Sheridan, executive director of the InfoTest Sector at The National Center for Manufacturing Sciences in Ann Arbor, Mich., said that unlike other tools that focus on exchanging known data, Yenta could help corporate customers seek out new sources of information.

Yenta's source code is public. Users in the U.S. and Canada can download it at *http://yenta.www.media.mit.edu/projects/Yenta/*. Yenta is currently available only for Unix systems but will be ported to Windows.

PRETTY AS A PICTUREBOOK

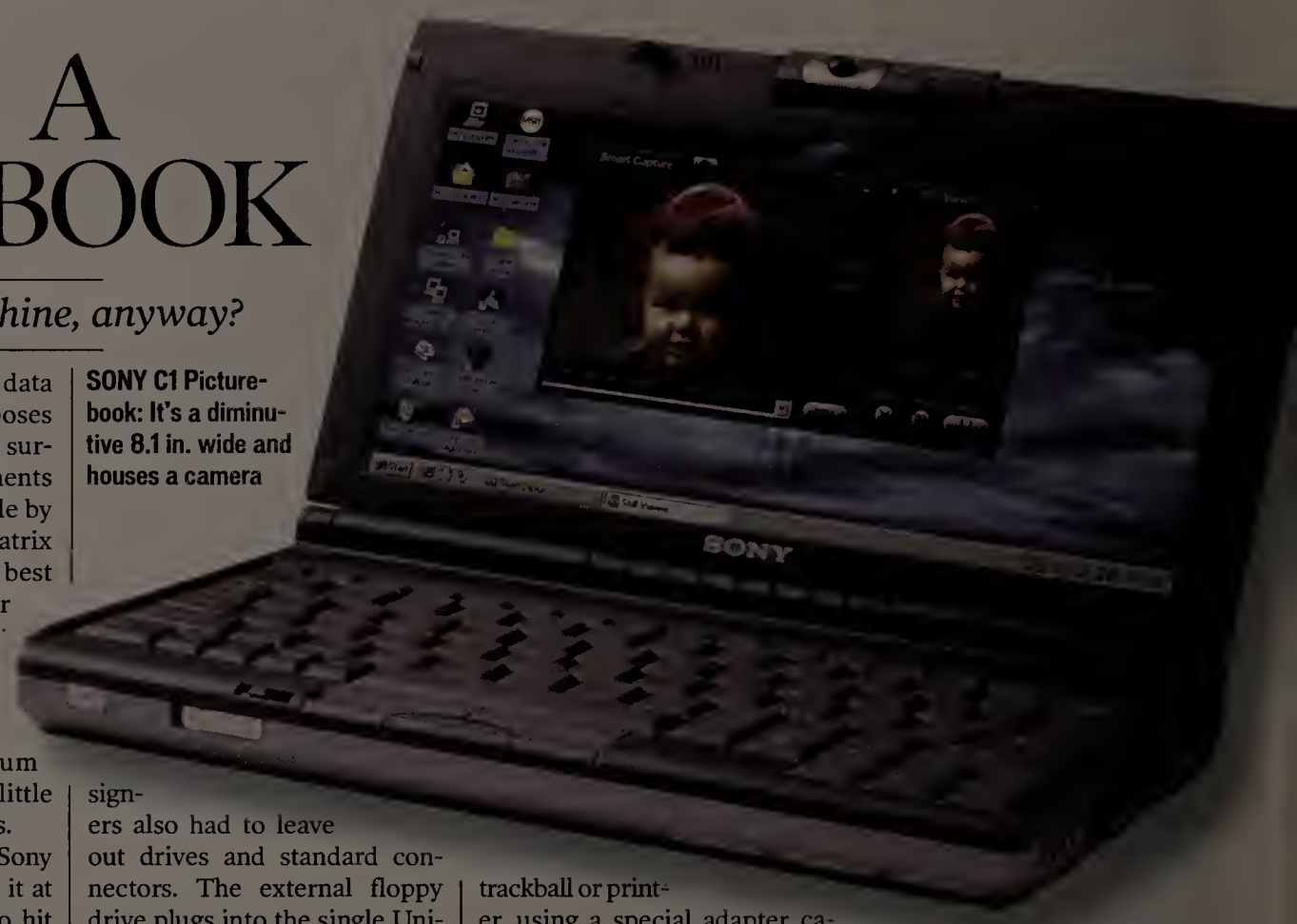
What is this new small, lightweight machine, anyway?

BY RUSSELL KAY

AT FIRST GLANCE, the Sony Corp. Vaio C1 Picturebook looks like a shrunken version of the Vaio 505, whose small size caused such a stir a year ago. But then you notice the built-in digital video camera.

With its 266-MHz Pentium MMX, 64M to 128M bytes of RAM, a 4G-byte hard disk and built-in V.90 modem, it may be the smallest computer that runs full Windows 98, not Windows CE. This $2,299 computer weighs just 2.5 lb.

Sitting on top of the widescreen, 1,024- by 480-pixel display is a cyclopean eye that can pivot up and down 180 degrees. Press the "capture" button next to the screen: A window pops up, and suddenly you see yourself on-screen. The camera can capture up to 60 seconds of 160- by 120-pixel MPEG-1 video (with sound) or a very large number of stills. Having the camera built-in makes this an ideal machine for recording images and data in the field for such purposes as inspections, inventory, surveying, insurance adjustments or real estate. At 8.1 in. wide by 3.8 in. high, the active-matrix LCD screen isn't at its best viewing Web pages, but for most normal uses it's both big enough and eminently readable. It did, however, cut the life of the lithium ion battery to a little less than two hours.



SONY C1 Picturebook: It's a diminutive 8.1 in. wide and houses a camera

PRODUCT REVIEW

The keyboard is small; Sony calls it 90%, but I measure it at 75%. I found it too easy to hit multiple keys at once and to brush the middle mouse button and inadvertently move the cursor up or down several lines. To make the Picturebook so small and lightweight, the designers also had to leave out drives and standard connectors. The external floppy drive plugs into the single Universal Serial Bus (USB) port, and the optional CD-ROM drive (with separate power supply) plugs into the PC Card slot. The USB port is also where you plug in an external mouse, trackball or printer, using a special adapter cable. You can hook up an external monitor or projector via another special cable, and there's also an IEEE 1394 connector for digital video input.

The Picturebook is at the high end of today's midprice portables,but if I could have just one computer that I had to lug around constantly on the road, my choice would be the Sony Picturebook.

PRODUCT
SONY C1 PICTUREBOOK
Sony Electronics Inc.
San Jose
(888) 315-7669

PROS
Small, light and powerful; comes with camera

CONS
Keyboard too small for some; odd display format; proprietary connectors and cables

OVERALL GRADE **B+**

GRADES

Installation	A
Features	A
Performance	B
Compatibility	C
Value	B

Compaq's Color Palm Woos Corporate IT

Offers screen clarity, color; RAM upgrade

BY DAVID ESSEX

The color-screen, palm-size computers that vendors are rolling out this spring should interest information technology for more than the readability of their displays.

The color-enabling upgrade of Windows CE for palm-size PCs also features new programming tools that corporations are already using to build custom applications.

PRODUCT REVIEW

I tested one of the first such systems, Compaq Computer Corp.'s Aero 2100. This is no incremental upgrade. Active-matrix color is a big deal on such small (roughly 2.5 by 3 in.) screens. It makes long periods of viewing tolerable for the first time. The screen on the Aero, Compaq's first palm-size PC, is sharp and pretty but not especially bright. Even using the brightest of two backlight levels, I sometimes had to get up close and angle the unit to minimize glare and reflections. (In comparison, the 65,536-color display of Casio Computer Co.'s Cassiopeia E-100, which arrived after the test deadline, is as bright as those of the best notebook screens.) Compaq says it eschewed the brighter backlighting in favor of a side-lighting technique that draws less power and makes the screen look sharper in daylight, where many mobile professionals will use it.

You pay for color in battery life. The Aero's rechargeable lithium ion cells purportedly get seven to 10 hours per charge. The cradle that holds the Aero's serial connection to a PC is also a battery recharger and is included.

Also adding tremendously to this palm PC's usefulness is the inclusion of Microsoft Corp.'s Visual Basic, Microsoft Foundation Classes and ActiveX Data Objects tools in this version of CE. With 8M or 16M bytes of RAM (upgradable to 24M), the Aero has adequate room for serious applications such as Microsoft Access databases and forms created in Word 97. And a Type II Compact Flash slot gives access to all sorts of connectivity. The 70-MHz RISC processor is comparatively low, so the Aero's applications load slowly and in piecemeal fashion.

A rudimentary asset-management utility stores data about each component, such as RAM size and read-only memory version, which IT can use to track inventory and help tech support. But it doesn't do so in a way that's accessible remotely via network standards such as Simple Network Management Protocol or Desktop Management Interface.

I found the Aero reliable and easy to use. It transferred to-do lists and contacts to and from my 400-MHz Pentium II desktop smoothly and predictably. The gray/black, hard-plastic unit feels sturdy, and the buttons are easy to master. The Aero just needs a faster processor and a brighter screen.

Essex is a freelance reviewer in Antrim, N.H.

PRODUCT
COMPAQ AERO 2100
Compaq Computer Corp.
Houston
www.compaq.com

PRICE
$449 (8M bytes RAM), [illegible] (16M bytes RAM plus [illegible] cation software CD); $5[illegible] (has same features as above plus carrying case and extra battery)

PROS
Sharp color images; bundled expense software; Windows CE's new development tools; intuitive controls

CONS
Dim screen lighting; mediocre performance; shorter battery life than monochrome palm devices

OVERALL GRADE **B**

GRADES

Installation	A
Features	B
Performance	C
Compatibility	C
Value	B



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Review: Here's One Ant That Won't Bug You

BY RUSSELL KAY

Gateway calls its Solo 3150XL notebook computer the FireAnt because it's one small, high-performance notebook.

An update of the 3100 introduced last fall, the new FireAnt adds direct network connectivity via a built-in Ethernet interface and RJ45 socket, so information technology managers won't have to give users an Ethernet PC Card and dongle. When equipped with the optional digital video disc (DVD) drive, the FireAnt also has a PC Card MPEG decoder. (A CD-ROM is also available.)

The FireAnt weighs 5.2 lb. but packs a 366-MHz Pentium II CPU, 96M bytes of RAM, a 6.4G-byte hard drive, a built-in 56K bit/sec. V.90 modem, the on-board network connection and a 12.1-in., 800- by 600-pixel (SVGA) active-matrix display.

To save space and weight, the two-speed DVD drive is nonremovable, and the floppy drive is external. The full-size keyboard is one of the best laptop keyboards I've ever used.

The lithium ion battery is easily and quickly replaceable. With all power management turned off, it lasted about an hour and 45 minutes.

The port replicator was convenient, but nothing like a real docking station as it didn't have its own power supply and degraded the video signal.

If the $3,349 price tag seems steep, consider the 3150 SE. For $2,499 you get a 300-MHz CPU, 32M bytes of RAM, a 4G-byte hard drive, and an 8- to 20-speed CD-ROM in lieu of the DVD. But you keep the same bright active-matrix screen as well as the keyboard, modem and network connection.

I've been using the FireAnt for a month, and of the dozens of portable computers I've tested over the past decade, I haven't seen one I prefer to the FireAnt. I wish that the battery lasted longer, that the LCD supported 1,024- by 768-pixel resolution directly and that it offered more video memory. But, all in all, I think I'm in love.

PRODUCT

GATEWAY FIREANT

Gateway
North Sioux City, S.D.
(800) 846-4208
www.gateway.com

PROS

Excellent, full-size keyboard; built-in modem and network connections; DVD drive

CONS

External floppy drive; screen limited to SVGA

OVERALL GRADE **A-**

GRADES

Portability	B
Versatility	B+
Display	A-
Keyboard	A
Battery life	B+

We don't make this stuff up.

Company's controller says she stole millions from firm

RICHMOND, Va. — The controller of a computer consultant firm has acknowledged she is guilty of stealing between $8 million and $12 million from her employer, her lawyer said.

Prosecutors allege that Mary Adams Collins, 31, stole the money from Halifax Technology Services Inc. to purchase real estate, jewelry and automobiles. She was charged Thursday with federal bank fraud and money laundering.

Collins has signed a plea agreement admitting guilt and saying she will make full restitution, said her attorney, Thomas Wolf.

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"At Sony, we installed [redacted] at [redacted]

I developed reports myself and put them on the Web by [redacted]."



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Gary Fischer, Data Warehousing Manager at Sony Electronics says, "It gives everyone from senior executives to operational staff the answers they need when they need them."

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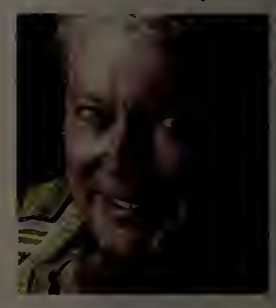
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Drive Pioneer Sees Fibre Channel in Future

Al Shugart, 68, who founded Seagate Technology Inc. two decades ago — and was fired from his position as CEO last July — helped build the world's first disk drive in 1956 while working at IBM. In 1973, he co-founded Shugart Associates, the company that pioneered the floppy disk. Today, Shugart serves on the boards of several companies and runs Al Shugart International, a venture capital firm in Soquel, Calif., that he started a month after his ouster from Seagate. *Computerworld* reporter Tom Diederich asked Shugart where storage technology is heading.

Q: In 1995, storage per megabyte cost around 50 cents. Today, it's 2 cents. What are the implications for information technology management?

A: I think IT management has always been faced with the same difficulties, and that is making proper use of their storage. It's going to get bigger and bigger and bigger, so whether it's optical or magnetic, I don't think that it makes much difference. The IT challenge is going to remain the same: How do you keep track of all this stuff? And not only now, but also a few years from now, when it's twice as big.



SHUGART: The challenge will be the same: "How do you keep track of all this stuff?"

Q: How will we manage it?

A: I think Fibre Channel will be the interface of the future between storage and computers. It's a serial interface, it's not that costly, and there's not the same limitation on the distance you can have between your storage and your computer. The ATA interface [used for most PC internal drives] has really been too slow, and [so] people were using SCSI, which is a parallel interface but a little too expensive and confining. So Fibre Channel is going to be the interface of the future.

Q: Do you see storage-area networks becoming a trend?

A: Oh sure. And what that means to me, whether it's storage-area networks or network storage — there's all kinds of names people are putting to it — is that you put more intelligence into the disk drive. You put some computer intelligence into the disk drive to take some of the load off the server, and that permits the disk drive to make some decisions.

Q: What's the Internet doing to storage needs?

A: The Internet is a fantastic catalyst for increased storage. Whether it be magnetic, optical, magneto-optical or even tape, the growth of the Internet is requiring so much storage that it's been a boon to storage companies, regardless of what technology they are in. And that's going to continue. I don't see any stopping that. ◗





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FIREWALL APPS TO BOOST VPN SECURITY, EFFICIENCY

Check Point modules to support clustering, bandwidth management

BY BOB WALLACE

CHECK POINT Software Technologies Ltd. last week announced software to address user concerns about the security, performance and reliability of virtual private networks (VPN).

The enhancements are due in the third quarter and will come in the form of add-on software modules that will run on the VPN-I Gateway firewall. On tap is support for multiple public key infrastructures (PKI), the ability to use two VPN units to eliminate a single point of failure, clustering of devices for scalability and bandwidth-management features.

One expert said Check Point has a jump on its rivals. "I've seen the clustering capability from a start-up and fail-over from Cisco [Systems Inc.], Ascend [Communications Inc.] and Bay [Networks Inc.], but I've yet to have anyone present me with everything Check Point has outlined," said Abner Germanov, an analyst at International Data Corp., a research firm in Framingham, Mass.

"Check Point is stepping up to the needs of [corporate] customers who are working toward deploying VPNs by addressing their long-standing worries," said Vic Wheatman, an analyst at Gartner Group Inc. in Stamford, Conn.

"They're definitely hitting all the key areas and are well-aware of users' issues," said Richard Karon, a security analyst at Perot Systems Corp. in Dallas. "We're interested in eliminating the single point of failure, clustering for easy scalability and compression because it boosts throughput."

Perot is considering building an Internet VPN that would link staff at its customer sites with the computing resources at the company's headquarters, he added.

The potential enhancements would take the shape of add-on software modules.

One module, when installed in two VPN-I Gateways anywhere on the corporate network, enables VPN sessions to be automatically transferred without interruption to the second unit if the first fails.

Check Point is also integrating its FloodGate bandwidth-management software with its VPN-1 Gateway. That will enable network administrators to set policies for how traffic from different applications should be handled over the VPN, using the same management application. A module for the gateway that supports 10-to-1 data compression will also help optimize bandwidth.

To address the need to help support large numbers of VPN users, Check Point plans a module that will balance traffic across up to four clustered VPN-1 Gateways. That approach enables a cluster to support tens of thousands of concurrent VPN sessions and a 155M bit/sec. data rate.

In a move to support industrywide security standards, Check Point will support digital certificates from Verisign Inc. and Netscape Communications Corp. in the third quarter and from Microsoft Corp. and Baltimore Technologies by year's end. Check Point currently supports only Entrust Technologies' PKI.

A PKI is a system for defining and securing public and private encryption keys used to safeguard data. Supporting multiple PKIs means VPNs serving multiple companies using different systems can communicate securely.

Pricing for the VPN-I Gateway firewall begins at $2,495. Pricing for the VPN add-ons hasn't been set.

JUST THE FACTS

Checking Out Check Point

Items and functionality due:

- Multivendor public key infrastructure support
- Clustering gateways for scalability
- Bandwidth-management capabilities
- 10-to-1 data compression

SOURCE: CHECK POINT SOFTWARE TECHNOLOGIES LTD., REDWOOD CITY, CALIF.

Hotel Tests Ethernet Access on Phone Lines

YesWare aims to cut Web costs for guests, bolster hotel revenue

BY MATT HAMBLEN

New technology that could cut Web access costs for hotel guests while bringing new revenue to hotels is being beta-tested in Santa Clara, Calif., by Bethesda, Md.-based Marriott International Inc.

Developed by Elastic Networks in Alpharetta, Ga., the technology allows 4M bit/sec. Ethernet traffic to run over regular phone wires, eliminating the need to set up LANs in every hotel room.

At the DemoMobile 99 conferece last week in San Diego, Elastic Networks announced YesWare, software that lets hotels or other public places offer high-speed Internet access to guests, who would be charged a $9.95 daily access fee.

Analysts expect terrific growth in high-speed Internet access in hotels, airports and other travel locations. That could lower information technology organizations' need to set up dial-in access for their workers. With many hotels now charging 75 cents or more for each call to a toll free number, guests might find that the YesWare daily access fee balances out, analysts said.

But officials at the Santa Clara Marriott haven't decided whether they will buy the software. One issue is that YesWare's internal billing system hasn't been linked to the hotel billing system. "Right now, we have to do a manual posting of the billing. Seamless billing is a big factor in why we selected them as a provider," said Owen Leinbach, director of marketing at the hotel.

Another concern is whether guests will have the correct dongle to connect their laptop Ethernet cards to an Elastic Networks modem, which combines voice and data traffic and sends it over the hotel's phone lines, said Mike Murphy, the front-office manager at the time of the installation.

Atcom/Info in San Diego also offers hotels Ethernet ports through its IPort product, but it requires users to download additional software to browse the Net [CW, Jan. 18].

But with YesWare, "the user doesn't do anything but show up," said Shannon Pleasant, an analyst at Cahners InStat Group in Scottsdale, Ariz.

YesWare costs $26,000 for servers and software to support 480 concurrent users, which doesn't include the $700 proprietary modems needed in each room or the cost of TI Web access.

Hotel Access

HOTEL ROOMS WITH INTERNET ACCESS	
1997	4,000
2002	4 million*

HOTEL CHAINS BEGINNING TO INSTALL INTERNET ACCESS TO GUEST ROOMS

- Marriott International Inc.
- Hilton Hotels Corp.
- Hyatt International Corp.
- Wingate Inns International Inc.
- Radisson SAS Hotels A/S

SOURCE JUPITER COMMUNICATIONS INC NEW YORK. *COMPUTERWORLD* RESEARCH

BRIEFS

Security Risks

Percentage of security managers who have detected various types of attacks or misuse within the past 12 months:

97%	Insider abuse of Internet access
90%	Virus
69%	Laptop theft
55%	Unauthorized access by insiders
31%	System penetration by outsiders
26%	Theft of proprietary information

Base: Survey of 405 IT security managers; multiple responses allowed

SOURCE: COMPUTER SECURITY INSTITUTE, SAN FRANCISCO

Intel Hubs, Switches

Intel Corp.'s Hillsboro, Ore., networking unit has announced new 10M to 100M bit/sec. hubs and stand-alone switches. The Express 330T Stackable Hubs include a 16-port model that costs $1,159 and a 24-port model that costs $1,299, each of which can be equipped with an $899 management module. The 410T Standalone Switches include a 16-port model that costs $1,199 and a 24-port model that costs $1,379.
www.intel.com

Switch Prioritizes Apps

Top Layer Networks has introduced AppSwitch 2000, a 14-port switch designed to identify and prioritize specific business transactions and applications. According to the Westboro, Mass., company, the switch can differentiate specific applications and transaction types and can ensure that delay-sensitive traffic receives priority bandwidth.

Pricing begins at $9,995.
www.toplayer.com

Net Card for PowerPCs

Phobos Corp. in Salt Lake City last week announced the P100-FX, a 100M bit/sec. fiber-optic network interface card designed for Apple Computer Inc. PowerPCs. In full-duplex mode, it operates at speeds of up to 200M bit/sec. The P100-FX is compatible with Mac OS versions 7.6 and above. The card costs $179.
www.phobos.com

BRIEFS

ANX Adds Members

The Automotive Industry Action Group last week said the North American auto industry's intranet, the Automotive Network Exchange (ANX), has 74 trading partners on board, with another 70-plus on deck. The ANX, designed to securely and affordably link automakers and their suppliers, went live last fall. It uses virtual private network technologies and is being used to support sharing of encrypted messages, computer-aided design and manufacturing traffic and electronic data interchange transactions.

Packeteer Adds Exchange Devices

Packeteer Inc. is now shipping bandwidth-management devices that can control Microsoft Corp. Exchange messaging while protecting critical wide-area network applications. The devices help users manage Exchange's "bursty" and bandwidth-intensive flows without preventing other applications from getting the bandwidth they need, according to the Cupertino, Calif., company. The Exchange discovery technology is available on PacketShaper 4000, which supports T3 network links; PacketShaper 2000, which manages bandwidth on T1 connections of up to 10M bit/sec.; and PacketShaper 1000, which handles traffic of up to 384K bit/sec.

PacketShaper 4000 costs $16,000; PacketShaper 2000 costs $8,000; and PacketShaper 1000 costs $4,000.

www.packeteer.com

CA to Offer Remote Management Tool

Computer Associates International Inc. has announced ControlIT Advanced Edition, remote-control software for midsize to large companies.

The software helps administrators support users, manage systems and enable telecommuting over LANs, WANs and dial-up connections, according to the Islandia, N.Y., company. It provides Windows NT Server administration from a workstation, lets administrators view and control remote users' machines and lets users connect to network-attached PCs for applications and e-mail. Data encryption is also included.

Pricing starts at $199.

www.cai.com

Device Combines Routing, Monitoring

Eastern Research Inc. has announced the RPM 3000, a networking device that combines remote access routing with frame-relay trend-analysis monitoring.

For remote office access, the RPM 3000 provides real-time measurement of throughput, bandwidth utilization, bursting, congestion and network delays, according to the Moorestown, N.J., company.

Detailed reports are available via Eastern's WANwatcher reporting package, Telnet access, Web browsers or networks using the Simple Network Management Protocol standard.

Pricing starts at $1,995.

www.erinc.com

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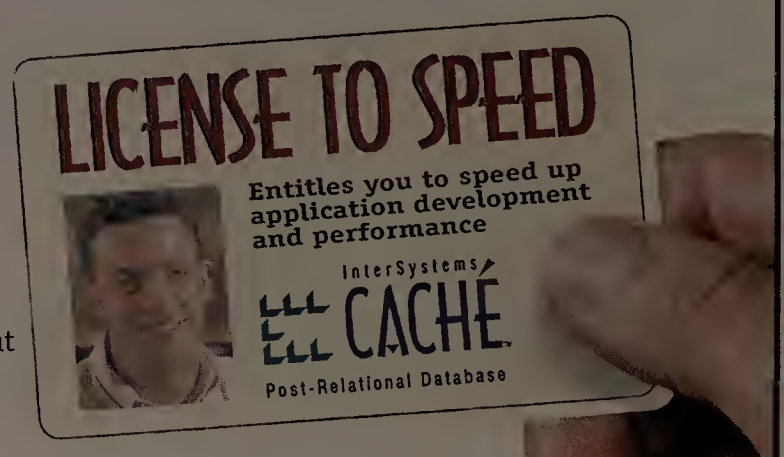
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Eek! Mice and More

Moving your cursor without mangling your wrist is not only possible, but it's also enjoyable

By Russell Kay

IN THE BEGINNING, Hollerith created the punch card and the keypunch, and its 80 columns sufficed to count the nation; thus ended the First Day of Reckoning. Then came the keyboard and the command line, and we saw that they were Good Enough to run computers with; and so ended the Second Day, called the Automation Era. Then was heard a mighty squeak from Xerox PARC — Lo! The mouse was born, and with it the graphical user interface (GUI). This, the Third Day of Computation, completed the development of Information-Processing-As-We-Know-It. And on the Fourth Day we stayed home, we surfed the Internet, and it was good.

The idea of using a pointing device instead of a keyboard to navigate around a document, drawing or abstract representation (of a desktop, a data set, a map or a diagram), and to select elements from it, radically changed the way we use computers. The mouse is no longer an option for computer use, it's a necessity — just try and run any version of Windows without one.

But not everybody likes mice, and some people can't use them because of repetitive stress injuries. Because of this, users should be aware of the variety of pointing/input options that are available and should be especially ready to try out different devices to maximize their productivity and comfort. Settling for the mouse that comes with your computer may be an expensive and painful false economy.

This article looks at some of the more ingenious variations in mice and mice replacements. First, note what we're not covering: No keyboards, no bar-code devices, no head/eye movement trackers, no light pens or touch screens, no dictation products, no presentation or remote-control devices and no game-based devices — jet-fighter joysticks, control pads, steering wheels, foot pedals, virtual-reality gloves or helmets.

Because of the variety of products, and because picking the right mouse ultimately comes down to a matter of personal preference, hand size and working style, we've opted to show just a sampling of what's available. We've included mice, trackballs, tablets with various attachments — and even an electronic version of the yellow legal pad for the die-hard traditionalist.



4 TrackMan Marble Mouse
Logitech

Scroll Your Own

1 The first real innovation in mouse design since its invention was the scrolling wheel that Microsoft Corp. put atop its IntelliMouse in 1996. Nowadays, every mouse maker offers some variation on that. One of the more interesting and nonconformist of the bunch comes from IBM, which includes a version of its TrackPoint stick as the third button/scroller on its newest $29 ScrollPoint mouse.

This Is a Mouse?

2 With few exceptions, a mouse looks like a mouse. But the $47.90 Anir Mouse from Norway's Animax International is a different animal entirely. This is essentially a joystick but the only one we've seen that wasn't designed for shoot-'em-up games or flight simulators. Ergonomically, this has some advantages over the standard mouse, and may be just the ticket for some people with wrist problems.

Pin the Tail On the Mouse

3 Then there's the mouse's tail (cord), which always seems to be catching under something on the desktop. The first solution was a mouse pad with a sort-of flagpole that held the cord up and out of the way. The cordless mouse was a natural development, though early versions were limited by their use of infrared to line-of-sight applications. Many modern cordless mice use radio frequency signals, which can penetrate piles of paper, even desk drawers, to find the receiver. Logitech takes advantage of this in its $99 Cordless Desktop, which combines a wireless keyboard and its Cordless Mouse.

Keeping Your Marbles On Track

4 Logitech's Marble family of trackball devices offers a unique series of choices to the user. For those who want to thumb their way on screen, the $59.95 TrackMan Marble Plus offers a small, thumb-operated ball (right-handed only) together with three finger buttons and a wheel. If you'd rather give your work the finger, the $39.95 TrackMan Marble Mouse has a midsize top-mounted ball flanked by two buttons. If you want



5 **TurboMouse**
Kensington Technology Group
www.kensington.com

to go whole hand, you might opt for the $79.95 TrackMan Marble FX, with a much larger ball you control between the right thumb and fingers. All the Logitech Marbles are recognizable for their red balls covered with irregular black spots. Thumb vs. fingertip control over the ball is very much a personal choice, and the only way to know which you'll like is to try them all.

The Original Trackball

5 The first add-on trackball was the $99 Kensington TurboMouse for the Macintosh. (Kensington's Expert Mouse is essentially the same unit for the PC). Its huge ball could be replaced with any of several different colors and designs, and Kensington remains a leading supplier of Macmousies. A smaller and even more popular trackball, the $50 Orbit, puts a midsize ball directly on top, flanked by buttons. That arrangement has since been imitated by Logitech and Microsoft.

Do You Have Something in Fuschia?

6 Apple Computer Inc. has complicated life for the aftermarket vendor by creating demand for multiple units color-coordinated with its five iMac "flavors." Kensington, in addition to Animax and Contour Design, has announced both mice and trackballs in colors that connect via a Universal Serial Bus port rather than the Apple Desktop Bus.

A Little Something For Everyone

7 The grandfather of the laptop computer's touchpad is the graphics tablet, which artists have been using for years. Perhaps the most versatile tablet system available today is Wacom Technology's Intuos system, which includes a tablet, a "4-D" mouse with optional lens cursor, three types of pens (some include "erasing" capability) and an electronic airbrush. With this by your side, you can point-and-paint in a very natural and efficient fashion. The 6- by 8-in. Intuos tablet we tried costs $329 with a single pen; the airbrush is an additional $95 and the mouse $40.

Don't Be Cross, It's Just a Pad

8 The newest tablet takes an entirely different approach. It's not a direct mouse replacement but occupies a category all its own. It offers the executive who prefers to write in longhand (yes, we know you're out there!) another option for producing electronic input. The CrossPad from A. T. Cross Inc. looks like a thicker-than-normal clipboard with a pad on it. Using a special pen, you write on the pad just as you would take notes anywhere. The CrossPad stores your writing, diagrams and doodles as digital ink, the way some pen-based personal digital assistants do. The pad comes in two sizes (I tried the smaller, $249 CrossPad XP, using 6- by 9-in. pads) and stores up to 50 pages. The results can be uploaded to your PC for permanent storage or to apply handwriting recognition software.

Is It Most Capable . . . Or Most Confusing?

9 The first mouse to come into widespread use – with Apple's Lisa and Macintosh – had just one button, allegedly to avoid confusing people. For Windows, Microsoft upped the count by adding a right button with a useful purpose. Then came programmable middle buttons, followed by a thumb button on the side. Now we have Kensington's $109 Web Racer, an especially intriguing browser buddy that has gone button-crazy. Starting with a touchpad, it also adds a number of programmable buttons dedicated to Web browsing and a button for a menu surrounded by four more buttons for scrolling. Odds are you'll either love this one or hate it.

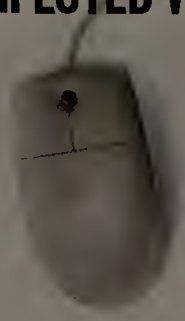
Web Surfing At Your Fingertips

10 Since its widespread adoption in laptops, the touchpad has been a popular desktop add-on. The leading supplier is Cirque, and its latest product for Web surfing, the $109 Cruise Cat, offers a surprising amount of functionality. It has specific areas dedicated to scrolling, back, forward and favorites, and it simulates clicks by finger taps. The device even includes handwriting recognition so you can program a function to be started by drawing on the pad with your finger.

Mighty Mouse Will Save the Day

11 Picking the right mouse is a very personal thing. The mouse I like best is the $49.95 Logitech MouseMan Wheel, which has an ergonomic body, three buttons and a wheel on top, plus a side-mounted thumb button. One nice thing about all the Logitech wheel mice is that their drivers let the scroll wheel work in any application.

INFESTED WITH INPUT DEVICES



1 **ScrollPoint Mouse**
IBM
www.pc.ibm.com/us/accessories/aptiva/scrollpoint



3 **Cordless Mouse**
Logitech Corp. International SA
www.logitech.com

2 **Anir Mouse**
Animax International ASA
www.animax.no





6 **Orbit iMac and USB mouse**
Kensington



7 **Intuos Wacom Tablet**
Wacom Technology Co.
wacom.com

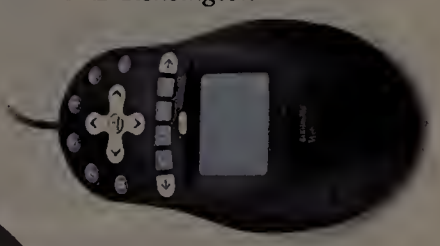


8 **CrossPad**
A. T. Cross Co.
www.crosspad.com

10 **Cruise Cat**
Cirque Corp.
www.cirque.com



9 **Web Racer**
Kensington

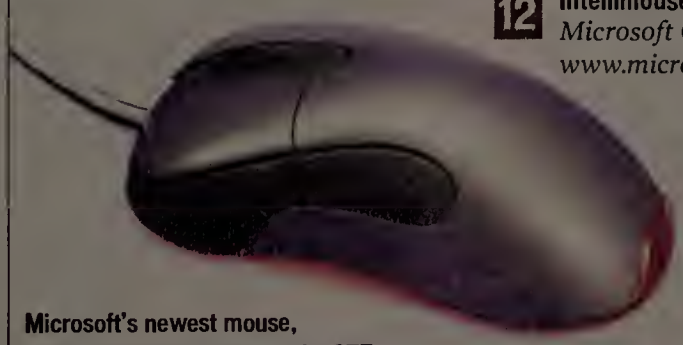




11 **MouseMan Wheel**
Logitech

HOT OFF THE PRESSES

12 **Intellimouse Explorer**
Microsoft Corp.
www.microsoft.com



Microsoft's newest mouse, being announced today, is the $75 Intellimouse Explorer, which does away with the physical mouse ball. Instead, a built-in light source and digital-signal processor tracks the scene and senses movement by recording changes – a technology Microsoft calls IntelliEye. Microsoft claims greater positioning accuracy and speed for the new product, plus it eliminates mouse pads.

Battle of the directories

Network managers are caught in the middle as Novell and Microsoft push their rival directories By Sharon Gaudin



NANCY ACKERMAN/CLIX

People have just begun to understand the value of a directory. . . . The directory is actually changing our business.

MONTY SHARMA, CHIEF TECHNOLOGY OFFICER, MARITIME TELEGRAPH AND TELEPHONE



JOHN HARDING

There could be a period where it will be a little bit busy maintaining both, but we're moving to an NT base, getting rid of some NetWare.

DENIS DARVEAU, NT SECURITY CONSULTANT, KAISER FOUNDATION HEALTH PLAN

NOVELL INC.'S PUSH to make Novell Directory Services (NDS) the directory of choice before rival Microsoft Corp. can get its own directory out the door has corporate network managers caught in a hailstorm of marketing strategies, high-tech promises and expensive bets.

That's because if they want a muscular, centralized directory, they're stuck with two choices: Microsoft's long-delayed Active Directory, which is expected to solve only part of their problems but has the weight of the industry leader behind it; and NDS, a 6-year-old, proven product that crosses platforms and components of corporate networks but lacks market muscle.

Information technology administrators can continue to manage their systems without a full-blown directory or with the decentralized directory offered in Windows NT 4.0. But industry watchers say that as enterprises grow in size and complexity, network managers will need a centralized directory that can manage everything from routers to users' security rights. For many companies, that means choosing between Active Directory and NDS.

Faced with a choice that will either shape — or dog — their expanding enterprises for years to come, IT managers seem to be split down the line. Those with a large, mixed environment that includes a good dose of NetWare and who kept the faith in Novell even when it was financially struggling are easily making the move to NDS. Those who have already invested in NT and want to move away from the management model in NT 4.0 are more likely to go with Active Directory because it will come as part of the package when they upgrade to Windows 2000.

"The directory alone will do many

things for a company," says Monty Sharma, chief technology officer at Maritime Telegraph and Telephone, a telecommunications company in Halifax, Nova Scotia. "People have just begun to understand the value of a directory. ... The directory is actually changing our business."

A directory is like an electronic Yellow Pages — listing information, network devices and resources. It enables the administrator and end user to find, access and manage the information they need regardless of which server or desktop it's sitting on, as long as they're connected to the directory.

A centralized directory stores and manages that data on one server. By contrast, in the decentralized model now used in Windows NT, user profiles are generally maintained on the client machine or on the nearest server. That raises security issues, and it doesn't let users log on at any computer they want because the user's profile is limited to only one desktop.

Directories like NDS and Banyan Systems Inc.'s Vines have been around for years, but the idea of a network directory as a critical administrative tool is fairly new — and is catching on fast.

"We're looking at getting NDS all the way down to the desktop ... and cutting our administrative costs in half," says Tim Talbot, vice president of technical management at PHH Vehicle Management Services Corp. in Hunt Valley, Md.

Mission: Streamline

CIOs and IT administrators increasingly want to manage their enterprises as an interconnected sea of hardware, routers, devices, applications, security functions and extranets, not just as islands of technology. As the enterprise grows and expands across platforms and remote locations, managing those functions has become akin to stopping a runaway train.

Novell wants to get control of that train by expanding the directory beyond the network, creating directory-based applications that will extend to routers, switches, applications and business logic. Novell is banking on users wanting to slim down their administrative chores by condensing their management tools into one.

Last month, Novell announced NDS Version 8, which can incorporate a billion objects into its directory, compared with millions in the current version. That jump was designed to create room to manage all corporate objects — including applications, user identification and routers — instead of just the basic network pieces.

Microsoft, as always, has its own army of third-party developers that are sure to build applications that will work with Active Directory. But at this early point in Active Directory's development, handling a billion objects is a future projection, not a reality.

Novell's head start is a major factor in many buying decisions. Novell launched NDS in 1993, before Microsoft announced its intentions to build its directory, which still hasn't seen the light of day. First, NDS tackled Novell's own operating system, NetWare. But it eventually crossed platform lines, taking on Unix and Microsoft's own Windows NT.

Large corporate users with their big pocketbooks are turning to Novell just as Microsoft sends its long-anticipated Active Directory to its third beta release, scheduled for this month.

"A few years ago when I went with NDS, everyone thought I was nuts," Talbot says. "They thought Microsoft and [Active Directory] was the way to go. But [it] still isn't out. ... I can do Windows and NT with NDS now. Why would I do anything differently after [Active Directory] comes out?"

De Facto Standard

But Microsoft is banking on the fact that Active Directory is incorporated into the Windows 2000 operating system and relies on it to provide critical services. That's reminiscent of Microsoft's push with its Component Object Model middleware, which went out every time someone bought a Windows product and soon became the de facto standard. Windows 2000, even though it's years late, is expected to eventually be a big seller as the easiest upgrade choice for big NT customers.

To use another directory, NT administrators would have to bring in NDS and override the directory already in use. Industry watchers disagree about how big a job that would be. But that might be a moot point because Active Directory will work fully only in Windows 2000, and it supplies limited services for the weighty installed base of Windows 95, 98 and NT 4.0 machines.

"We'll probably use NDS for NetWare and [Active Directory] for Windows 2000," says Denis Darveau, NT security consultant at Kaiser Foundation Health Plan, a 100,000-employee nonprofit health maintenance organization in Oakland, Calif. "There could be a period where it will be a little bit busy maintaining both, but we're moving to an NT base, getting rid of some NetWare."

But customers like Isaac Applbaum, CEO of Concord, Calif.-based Concorde Solutions Inc., the development subsidiary of Bank of America, aren't letting the fact that they're an NT shop stop them from considering NDS.

"I think we would possibly go with a different directory service than [Active Directory] because it's very important for us to support NT and other environments," Applbaum says. "Our philosophy is open, open, open."

Directory Dictionary

Directory: A Yellow Pages-like file or database that lists information and resources on a corporate network. Now used mostly to manage and administer networks; vendors and IT managers hope to use them in the future as platforms for applications.

Domain: A group of objects (such as users or servers) that share common security rights.

Dynamic inheritance: The ability to have directory changes made to one object automatically filter out to all subordinate objects each time a change is made. See *Inheritance.*

Flat file: A system that contains files or records that have no structured relationships with one another.

Hierarchical tree: A directory system that groups files by relationships, storing them in a tree-like structure in which an object "belongs" to the object directly above it.

Inheritance: The ability to make changes (such as to a user's access rights) to one entry in a hierarchical database and have the change apply to all subordinate files. For example, an administrator might alter user-access rights for the group "sales." The new rights would automatically be inherited by all users who are members of "sales," and anyone added to the "sales" group would also automatically receive those rights.

Lightweight Directory Access Protocol: A standard method of searching and using the information stored in directories that's widely used in Internet applications. It's liable to remain the chief access protocol for multiplatform networks for some time.

Static inheritance: A system in which changes made to one object won't filter out to all subordinates objects until the next time the directory is updated, either manually or automatically. See *Inheritance.*

NDS vs. Active Directory: Status Report

	NDS	ACTIVE DIRECTORY
Release level	Version 6	Third beta due this month
Client support	Windows 3.x, 9x and NT; DOS, OS/2, Mac, Linux	Windows 2000; limited support for Windows 9x
Server/operating system support	NetWare, Windows NT Unix, IBM S/390	Windows 2000 (Cisco reportedly working on Unix support)
Scalability	Up to a billion objects	Up to a million objects (planned)

Directory Road Map

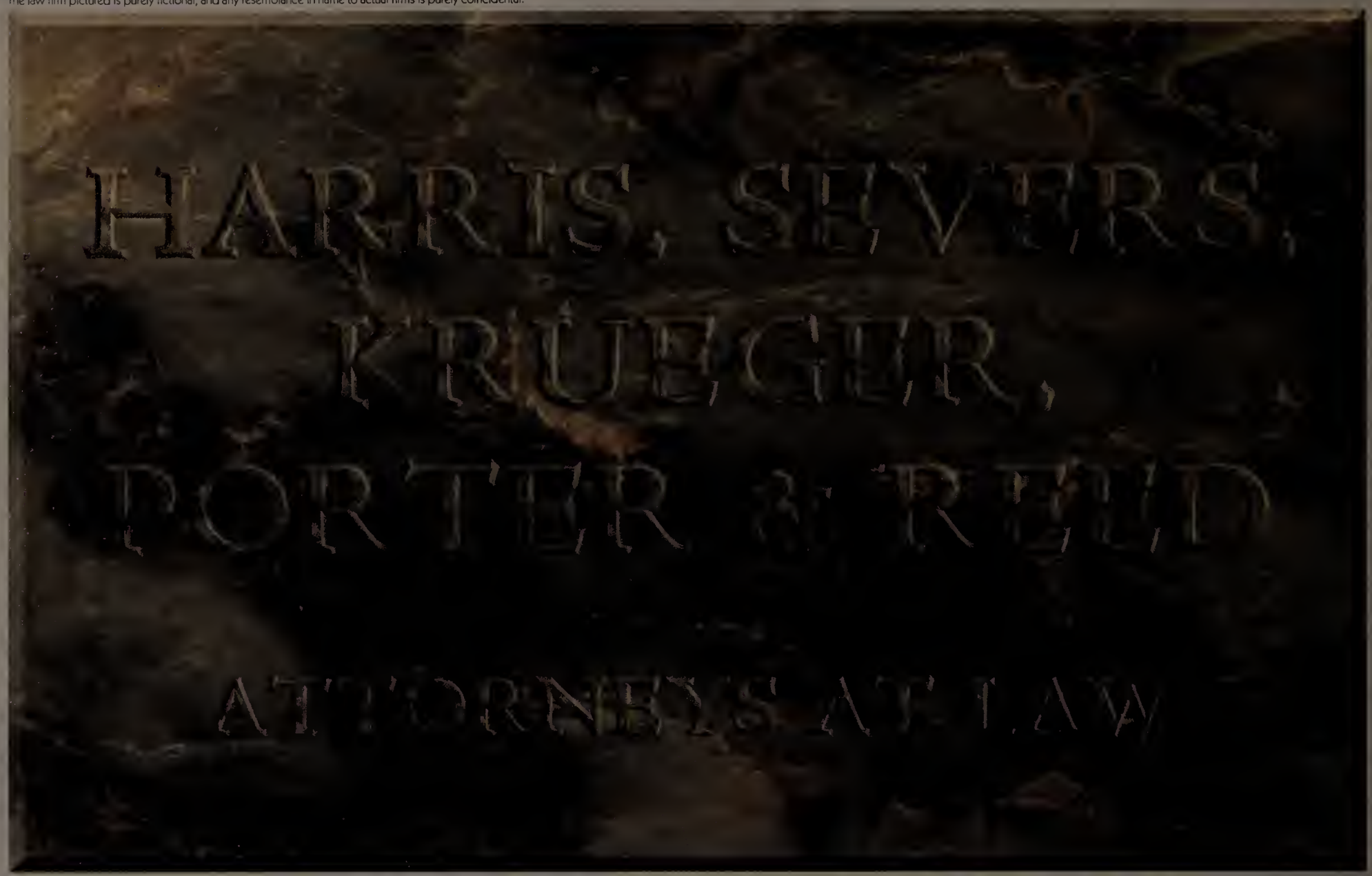
NDS

- First shipped in **1993**
- Went cross-platform with Unix support in **1997**
- Added Windows NT support in **1998**
- NDS Version 8 due in **May** (for NetWare only)
- NDS Version 8 for Unix and NT expected by **this summer**
- NDS for 64-bit platforms is being planned

ACTIVE DIRECTORY

- Development began in **1995**
- First beta in September **1997**
- Second beta in September **1998**
- Third beta due **this month**
- Shipment of Windows 2000 due in **October**
- Future versions of Active Directory expected to support upcoming 64-bit platforms

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You'll be hearing from them on January 3, 2000.

If your Y2K remediation is complete, congratulations are in order. But there are still questions, especially in case of a lawsuit: has the work been independently verified? Can you prove due diligence? Have you made contingency plans for Y2K emergencies? Have you got business continuity plans in place? ADPAC has the tools and the training to make the answer to all those questions "yes".

ADPAC SVReview is the automated COBOL tool that verifies Y2K changes, regardless of the methodology or vendor used. It provides the independent reports and audit trails that will support due diligence – critical information that companies will need in defending themselves against potential litigation. SVReview also helps you guard against recorruption of remediated code, whether it occurs as a result of routine maintenance, reengineering, or the introduction of new code that's not Y2K compliant.

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BRIEFS

New WordPerfect Office 2000

Next month, Corel Corp. will begin shipping WordPerfect Office 2000, a software suite for word processing, spreadsheets and presentations. The word processing application, WordPerfect 9, features new navigational tools and improved import/export and file conversion support. Quattro Pro, the spreadsheet application, offers enhanced data analysis, according to the Ottawa company.

The Standard Edition will cost $109; the Professional Edition will cost $209.
www.corel.com

Sybase Revamps SQL Anywhere

Sybase Inc. in Emeryville, Calif., has announced a new version of its mobile database software SQL Anywhere Studio that includes new UltraLite and MobiLink technologies. UltraLite provides a database that resides locally on handhelds and embedded systems. MobiLink is enterprise server synchronization software for the Microsoft Corp. Windows CE operating system and the 3Com Corp. Palm computing platform.

SQL Anywhere Studio costs $399 for one user and $999 for five users.
www.sybase.com

Soon, You'll Talk To Your PIM

Software for dictating e-mails and personal information manager entries into handheld recorders will ship this quarter from Dragon Systems Inc. Called Dragon NaturallySpeaking Mobile Organizer, the software lets users speak into a handheld digital recorder, then transcribes and analyzes what was said once the recorder is connected to a PC. It supports Microsoft's Outlook 98, 3Com's PalmPilot Desktop, Lotus Development Corp.'s Notes and other platforms.

The software costs $299.
www.dragonsys.com

Great Plains Adds ERP Modules

Great Plains Software Inc. in Fargo, N.D., last week added financial, legal and operational reporting software to its line of enterprise resource planning (ERP) applications for midsize users. Enterprise Reporting 5.0 can be used to consolidate financial data. It comes with optional modules that support Web-based data entry and global analysis.

Pricing for the software starts at $20,000.
www.greatplains.com

Links for NT Apps

Level 8 Systems Inc. in Cary, N.C., last week released packaged integration software for tying Windows NT-based applications to other systems. The Geneva Release 2.0 software includes data transformation and routing engines as well as prebuilt links to databases and messaging middleware, the company said. Java support and connections to mainframes and ERP systems are due later this year.

Pricing for the software starts at $125,000.
www.level8.com

Java Tools for Real-Time Tie-Ins

Intelic Software Solutions Inc., a San Jose-based startup, this week plans to announce Java-based software that can be used to give salespeople and independent distributors real-time links to order processing systems and other corporate applications. ProChannel runs on Oracle8 databases at the back end and Web browsers at the end-user level.

Pricing for the software starts at $150,000.
www.intelic.com

FRANKLY SPEAKING/FRANK HAYES

Ready to rumble

AT LONG LAST, we're about to see a good, healthy fight over Java. Not the courtroom battle between Sun and Microsoft — that won't benefit anyone but the lawyers. And besides, the referee — er, judge — wants the parties to settle their differences peaceably. No, we're about to hear the bell for a slugfest that will not only be entertaining, but just may finally deliver on all those Java promises.

In this corner is Sun Microsystems, which will officially unveil its HotSpot Java engine later this month. In the other corner is IBM, which just rolled out what it claims is the fastest Java engine for Windows, on its AlphaWorks Web site.

In the *other* other corner is the tag team of Novell and Intel, whose Java engine, dubbed NetFire, is also supposed to ship this month. And in the remaining corner is Hewlett-Packard, which will release a Java engine this summer and a compiler for HP-UX this fall.

What's going on? Has the Java alliance completely fallen apart? Nah — it's finally beginning to bear real fruit. IBM, Novell, Intel and HP are still committed to a Java standard. But they've finally stopped politely waiting for Sun to improve Java's performance. From now on, they'll do it themselves.

A coming slugfest may finally deliver on all those Java promises.

That means we'll see better Java products faster. Cooperation is a very civilized way to implement technology — but bare-knuckle competition gets the job done.

And we need that. We've been waiting more than a year for Sun's HotSpot Java engine, which actually compiles Java programs into native code instead of simply interpreting it, as standard Java engines do. HotSpot, which was going to boost performance spectacularly, was supposed to ship last year. Sun bragged that 1998 was "the year the problem goes away." That didn't happen.



Everyone knew the No. 1 priority for Java had to be snappier performance. Everyone, apparently, except Sun. So while Java's developers took their time getting HotSpot together, Java users did a slow burn.

But now we don't have to depend on Sun. For Windows, we'll have the option of IBM's new engine, which, like HotSpot, compiles Java to native code. Novell customers will get an engine that uses some of the HotSpot technology but is optimized for NetWare. HP's big move is a Java compiler that will generate stand-alone native code, so HP-UX users won't need a Java engine at all. In other words, we'll get real competition and real innovation.

Maybe that won't be much fun for the folks at Sun. Suddenly, the world of Java won't revolve around them. They'll have to start competing a lot harder — and delivering on their promises a lot faster — to remain the big dog. And while "write once, run anywhere" is still the goal, it won't be One Java, Under God.

It will also mean a little more effort for corporate IT shops working with Java. We'll have choices for a change. Not choices between one or another proprietary version of the Java language, but between interchangeable Java products we'll need to test and compare head to head.

It won't be neat and clean. Real competition never is. Java is about to get messier for us, as IT shops decide whether compiling Java to stand-alone code is worth the trade-offs and whether one Java engine is really better than another.

But that's the price of admission. The prize is that from here on out, those vendors will be beating their brains out to deliver the fastest or smallest or most stable or most innovative Java products.

That competition may just make Java a champ once again. ◗

Hayes, Computerworld's staff columnist, won't appear in this space next week — his new address will be just inside Computerworld's back cover. But his e-mail address is still frank_hayes@computerworld.com.

Geographic Information Systems

BY CATHLEEN GAGNE

DEFINITION

GIS is digital mapping technology used for demographics, tracking, dispatch and exploration. GIS software can search a database, extract information on such topics as population density, income, loans or mortgages, crime or delivery-route patterns, and then overlay that information on digital maps.

FINDING THAT perfect location for a new Thai restaurant or sporting goods store isn't as easy as it might seem. For starters, you have to examine details like highway and public transportation access, competitor locations and the income of surrounding residents.

Geographic information systems (GIS) can find and analyze that information.

"Marketing and retail users are finding [GIS] extremely valuable for performing functions such as demographic analysis, customer site-location planning and finding concentrations of target customer populations," says Bruce Jenkins, a vice president at market research firm Daratech Inc. in Cambridge, Mass.

GIS tools capture, store, analyze and display spatial data. They enable businesses to see and then map patterns from the collected data such as customer buying patterns or population density.

And these systems can do more than find the perfect location. They're also used for natural-resource management, emergency response systems, municipal management and planning, facilities management and automated mapping. For example, the Los Angeles Police Department uses GIS to figure out the shortest route to emergency calls, Jenkins says.

GIS products fall into three business areas, says David Sonnen, an analyst at International Data Corp. in Framingham, Mass. The first is enterprise systems dedicated to infrastructure management, "like a phone company or a power company keeping track of where all their stuff is out in the field or where their customers are," Sonnen says.

For example, one phone company converted its infrastructure from paper (more than 1 million drawings made by engineers) to digital form. The conversion saves the company more than $100 million per year, he says. Part of the savings was from staff consolidation that was possible when the move to the digital format decreased the workload.

The second area is mainstream information technology. "For example, where somebody has some business process that they want to support," Sonnen says. The fastest-growing spatial business application is customer resource management, which lets companies better understand their customers through demographics like income, residence location, background and interests, he says.

The third area is personal productivity. GIS could help a sales representative find the quickest way to drive to a customer's location, or a customer service manager might use GIS to learn where most repair problems have occurred, according to Sonnen. Microsoft Corp. has announced a new personal productivity tool called MapPoint. An add-on to Microsoft Office, MapPoint is for people who want to do this kind of everyday mapping or spatial analysis at the desktop level, Sonnen says.

According to Daratech, 1997 worldwide GIS revenues totaled $684 million. The leading vendors determined by market share were Environmental Systems Research Institute Inc. in Redlands, Calif., at 36%; Intergraph Corp. in Huntsville, Ala., at 30%; and MapInfo Corp. in Troy, N.Y., at 5%. Last year's market share figures, not yet available, are expected to remain comparable, Jenkins says.

Starting now and continuing into the future, Sonnen says he expects to see more integration of spatial information with online applications. "For instance, if you have a [retail] call center . . . taking customer support kinds of information . . . this system will go out and find the nearest set of resources for that customer to buy," Sonnen says. "That sort of stuff is going to be mainstream shortly. We think it's going to be a big part of this whole emerging e-business structure."

Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCann at stefanie_mccann@computerworld.com.

AT A GLANCE

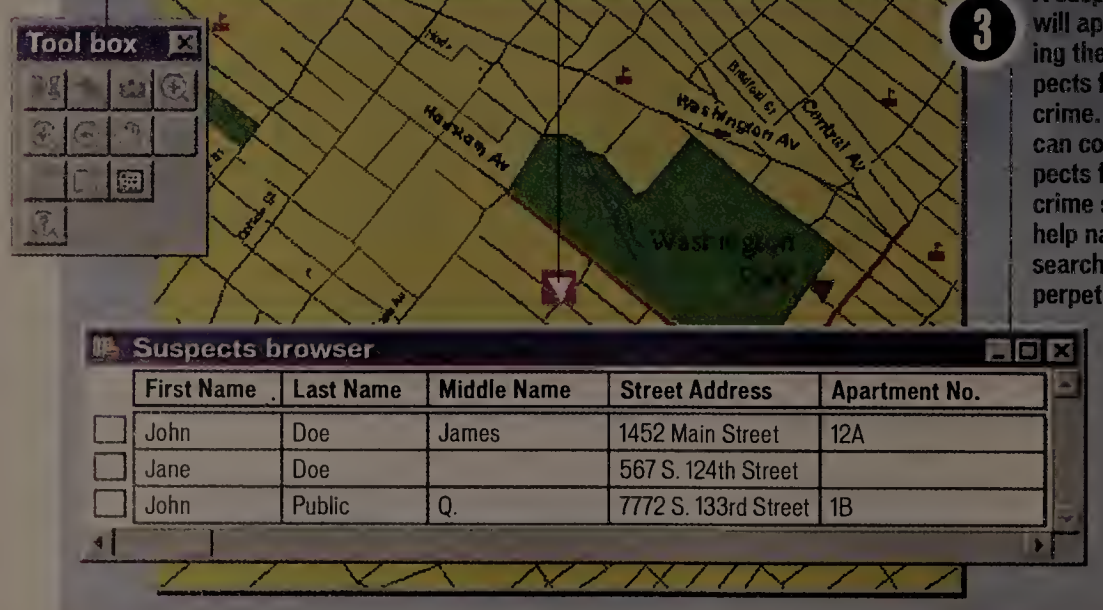
GIS vs. GPS

Don't confuse Global Positioning System (GPS) with GIS. Although they can be used together, they are different technologies:

	GIS	GPS
What they are	Software that overlays demographic data on maps	A satellite-based navigation system that helps people determine their location within 100 meters
An example of how they can work together	In farming, can show what areas of a field need certain nutrients	Can pinpoint the tractor's location as it applies fertilizer in the right amounts

A SAMPLE ANALYSIS USING MAPINFO PROFESSIONAL 5.0

How a Police Department Can Do Crime Analysis Using GIS:



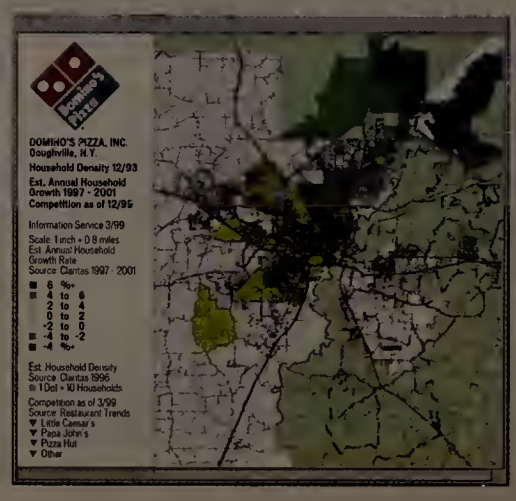
MOREONLINE

For more information about GIS, visit our Web site.
www.computerworld.com/more

AT A GLANCE

How Domino's Uses GIS:

Domino's Pizza Inc. uses GIS to determine where it should open its next shop



1. Information such as household density, growth rate and average income for the area is collected from the U.S. Census Bureau.
2. The collected data is overlaid on a map.
3. Shaded areas on the map show the analysis of the information and the trends happening in each area.

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Dun & Bradstreet

Taming the DESKTOP

New desktop strategies help IT managers push for 24/7 client computers

By Cynthia Morgan

THE AUDIENCE at a recent software debut shrugged through the CEO's feature-filled presentation but surged to its feet and applauded at one user's comment: "I don't care about new features," he said. "Just tell me if you've fixed the ones that are already there."

The corporate desktop is spinning out of control. Information technology managers must balance PC users' expectations of around-the-clock reliability against expanding feature sets and burgeoning compatibility problems. In a talent-stretched IT organization, that's bad news.

Around-the-clock operation is a long way off for most corporate PCs. What's needed is a new desktop client that's always available, has minimal training requirements for users and little need for hands-on support.

Centralizing desktop management seems to be the best way to provide this new desktop. The question is: How much do you centralize?

Keeping clients fat — permitting most, if not all, applications to run on the user's local CPU — lets you keep using 10M bit/sec. Ethernet connections without worrying about network traffic jams. And it also preserves the comfortable graphical user interfaces (GUI) that users and help desk technicians already know.

But fat clients also are the hardest to manage from the server. They require reasonably powerful PCs and a lot of expensive maintenance.

Thin clients, on the other hand, are much easier to manage because the software stays on the server. The user's desktop simply peers through a window into networked applications.

The client takes little hands-on maintenance, and if a user's machine dies, he simply logs on to the next one.

Yet thin clients are expensive to buy and require hefty chunks of server resources. And thin clients may be a difficult sell to an organization that takes the freedom of PCs seriously.

Fat clients, fat headaches? Thin clients, thin wallet? That's true, to a certain extent. But we talked to three IT managers who are implementing the newer, more reliable desktop and who say they have so far managed to escape the headaches and budget problems.

Our IT managers took very different approaches to this same end. One opted to slip client software into a centrally managed straitjacket. Another is sticking with mostly PCs but adding Java-based thin clients wherever it makes sense. The third opted to push thousands of dumb terminal and networked PC users to a full-scale solution of network computers and Java applications.

In each case, these managers reduced support costs and improved information access without disrupting users.

Better Control, Not Thinner Clients

THIN CLIENTS WEREN'T the answer for Covington & Burling, Attorneys at Law in Washington. "It's hard to get people to leave old technologies behind," says IT manager Stuart Franklin, adding that his firm's lawyers and ancillary staff weren't willing to give up the advantages of a PC's removable storage and flexible configurations in the office.

Still, it was obvious that something had to be done to keep desktops running without sending support costs through the roof. Franklin decided that the benefits of thin clients paled beside the advantages of simply managing the back end more effectively. "If you take 500 users and put them on thin clients, your hardware requirements are going to change dramatically," he points out. "Before, you could settle for a single server with a gigabyte of RAM and dual processors. With thin clients, you'll need at least six servers."

Covington & Burling chose to manage its desktops using On Technology

IT MANAGER NO. 1

Stuart Franklin

Information technology manager

Organization: Covington & Burling, Attorneys at Law

Business: Multinational law firm based in Washington

Users: More than 1,100 in offices in Washington, San Francisco, Brussels and London

Challenge: To relieve the support burden caused by having more than 1,100 PCs in three countries, while not challenging users for control of the desktop

Solution: Preserve the fat-client front end but reduce support costs by controlling deployment and maintenance from the server.

Tool kit: On Technology Corp.'s On Command Comprehensive Client Management



KATHERINE LAMBERT

STUART FRANKLIN didn't abandon existing fat client technology. The Covington & Burling IT manager simply added more effective controls

Corp.'s ON Command Comprehensive Client Management (CCM) system. The software installs on every server in the firm's four locations, controlling desktop software maintenance from a single console.

"We manage at least 800 PCs through CCM in the D.C. office alone, with Unix, Windows NT 4.0 and NetWare on the servers," Franklin says. "Our new machines are configured with as many as 30 to 35 applications plus the operating system, but it only takes four to six mouse clicks, the network interface card's address and the name of the computer to completely set up a new machine."

CCM lets Franklin's team configure new PCs quickly, even adding the appropriate time, keyboard and font standards for international offices. It also restores correct configurations when problems occur and can make unattended upgrades at night, when offices are usually locked, to prevent unauthorized access to confidential files. "We have a standard base set of apps and then customize according to the department profile. If there's a problem, we can recreate a user's entire desktop in four or five mouse clicks."

The system is valuable for quickly diagnosing PC crashes that once took days or weeks to resolve.

"We had a lot of problem calls, and the log showed they occurred right after we installed a new network client. We stopped the rollout, rolled back the systems that had already received the install, fixed the problem and started over," Franklin says.

Moving to a strictly controlled client environment isn't a simple matter, however. CCM requires scripts to build and rebuild each PC configuration.

While the tool's macro-style record-and-edit scripting functions seem intuitive, Franklin warns, upfront training of IT staff is vital. "Ninety percent of the time you have no problem, but the remaining 10% — mostly setups for older applications — can be tricky. If we'd had more people trained, we would have known there were easier ways to deal with those applications and saved ourselves a lot of effort."

Franklin says he's not opposed to thin clients. "Thin clients are important when you're promoting telecommuting and when you can justify putting a server in a small branch office," he says. "The fat client, however, is more robust when your people are coming in to work in a central office every day."

Turning Techs Back Into Librarians

THE LIBRARIANS at the University of Western Ontario had become PC support technicians, troubleshooting problems when the library PCs broke down. And they didn't like it.

"We had to find a way to turn them back into librarians," says Michael Bauer, the university's senior director of IT services. Bauer's solution may become the model for much of the client-side computing done on the London, Ontario, campus.

IT MANAGER NO. 2

Michael Bauer

Senior director of IT services

Organization: University of Western Ontario, London

Business: University library and administrative offices

Users: 25,000 students, more than 3,000 faculty and other employees

Challenge: To increase availability of library reference systems while lowering support and equipment costs without disrupting existing networked systems or the new enterprise resource planning system

Solution: Java-based thin clients

Tool kit: Sun Microsystems Inc. JavaStations and Sun Ultra Enterprise 450 servers

"In August 1997 I had a little budget money left over so we decided to try out 10 Sun [Microsystems Inc.] JavaStations. By December we had a working Java environment for them. By January 1998 we'd deployed all 10. By March the librarians were hooked." The system's browser interface lets users access library catalog files and affiliated databases, manage a Unix-based e-mail application and scout the Web.

Bauer says his biggest concern was fitting thin clients into a diverse array of existing computer systems when his organization was also completing year 2000 remediation. The university was migrating from administrative and database applications run on an IBM 3084 mainframe to server-based PeopleSoft Inc. applications to avoid looming year 2000 problems — a labor-intensive job. "The last thing we wanted to do was change anything that already worked. We already had servers and authentication systems in place," he said.

The trick to successful network computer implementation, Bauer says, is to move slowly. "Pilot first on a very small scale to make sure you and your users can stand the inevitable surprises. Once the surprises stop, you can scale."

"Those first units had problems. Screens would occasionally lock, and there were lots of little difficulties with accessing library systems that had to be ironed out," Bauer says. "We had to wait for an upgrade that would let us use the system with library databases that have a text-based interface, for example."

But even with the problems, Bauer says, it was obvious the students and librarians liked network computers better than PCs. "We thought the lack of a floppy might be a problem for students, but they just mail files to themselves, or store them on the server, then go home, log on to the server and retrieve them. Best of all, instead of calling someone to repair the PC, they can simply shut down the machine and start over."

One unexpected benefit: "Theft has dropped to the point that the librarians are putting JavaStations in the library stacks. They'd never leave a PC unattended that way. If they did, computer parts would always be turning up missing," Bauer says.

Bauer's team has already added another 240 JavaStations throughout the university library system. "Down the road, we're including JavaStations in

Continued on page 94

Taming the DESKTOP

Continued from page 93

dorm rooms. We're hoping to start pilots of [network computers] in the residences next year."

More daunting is the end users' reluctance to accept thin clients in place of PCs in the university's administrative offices. "The problem is not so much technological as sociological. It's not Word, it's not Office. There's no floppy, there's no hard drive, and that's a mental hurdle for some people," Bauer says.

The lack of good Java-based apps for thin clients doesn't help the situation. "We need a good word processor, spreadsheet and presentation graphics, with a [Portable Document Format] viewer. They have to be familiar to the users and as compatible with other desktop products as possible. We've looked at a couple of office suites from IBM/Lotus Development Corp. and Star [Division GmbH]," Bauer sighs, "but they're just not ready yet."



PETER YATES

MICHAEL BAUER helped University of Western Ontario librarians get back to being librarians by implementing a system based on Sun JavaStations

Network Computers Pass the Stress Test

FOR ENTERPRISE resource planning applications to be effective, they must go where the action is. Unfortunately for AlliedSignal Inc.'s Turbocharging Systems division, the action was in the harshest environment possible: the manufacturing floor where turbochargers are produced.

"We needed the folks on our shop floor to start putting in production data, managing inventory and communicating with the main office using our new SAP AG R/3 applications," says information systems manager Cynthia Reese. "Up till then, we'd been forced to use dumb terminals or very expensive ruggedized PCs that no one liked. A PC in that environment didn't last long; the fans just soaked up the grease and it literally dripped out of every opening."

Reese's team went live last December with an R/3 suite that manages accounting, production, quality control, sales and distribution with the new applications. The near-disposability of network computers — clients are relatively inexpensive because the real power is on the server — was appealing. "The first place we tried the [network computers] was the shop floor. It was great. If the box breaks, we just drop-kick it into the trash can and plug in another one."

The company chose IBM's Network Station Series 1000 network computers as front ends to Compaq Computer Corp. servers running Citrix Systems Inc.'s MetaFrame on NT 4.0 Terminal Server Edition. The setup offers access to the Java-based SAP system running from Hewlett-Packard Co. hosts at AlliedSignal's corporate technology center in Tempe, Ariz. It also gives users standard Microsoft Corp. Office applications and access to e-mail and the corporate intranet. Network computer users reach applications through a familiar browser interface and can even view computer-aided design (CAD) drawings from the shop floor.

"The benefits were immediate," Reese says. "For the first time, our key employees were actually able to talk to the suppliers directly, instead of going through several layers of paperwork, and get the parts we need to survive. Productivity went up hugely."

AlliedSignal now has 65 IBM Network Stations running in its Torrance, Calif., headquarters and is expanding the pilot to the rest of the organization. "Hardware's cheap. The labor force is not. We've saved employees so much time that we can now impose time management and reporting systems on employees — things we couldn't have gotten near them before," Reese says. "We've got much better feedback on our business processes, and the employees on the floor feel like they've actually got some control."

The system has worked so well, in fact, that AlliedSignal Turbocharging intends to deploy Network Stations to most of the 3,000 employees currently using the SAP applications around the world. "We took the system down to Mexicali, [Mexico], and we'll be putting 50 systems in the U.K. soon. We'll probably go to Italy next."

IT MANAGER NO. 3

Cynthia Reese

IS director

Organization: AlliedSignal Turbocharging Systems, a division of AlliedSignal Inc.

Business: World's largest manufacturer of turbochargers; sold $1 billion worth to automotive and commercial diesel industries in 1998

Users: More than 5,500 employees spread over 50 sites in 11 countries

Challenges: To extend new SAP AG Java-based applications throughout the company (including the factory floor), to increase easy access to critical applications and to reduce desktop support costs.

Solution: Shift Windows application load back to servers using Citrix Systems MetaFrame and hardy thin clients

Tool kit: IBM Network Station Series 1000 thin clients, Citrix MetaFrame, Windows NT 4.0 Terminal Server Edition

Before, you could settle for a single server with a gigabyte of RAM and dual processors. With thin clients, you'll need at least six servers.

STUART FRANKLIN, IT MANAGER, COVINGTON & BURLING

Still, the team is taking care to introduce the new systems at a manageable rate. "Twelve to 18 months from now, only about 200 PCs will remain at the Torrance, Calif., site and we'll have about 350 [network computers]," Reese predicts. "In the next 24 months, we'll have at least 1,500 users in offices and on the shop floors fully switched to NCs. About the only people that won't get NCs are the engineers — their CAD programs and things really need a PC."

Reese and senior network engineer Harvey Siewert said users exhibited little resistance to losing their PCs.

"Quite the opposite, in fact," chuckles Siewert. "The NCs are getting a reputation for reliability that we never could achieve with PCs and that alone is driving demand for them. We've got people literally begging to be put on the list to receive one."

"For the most part, there were no cultural issues to overcome," Reese confirms. "One night we just set the NCs by each dumb terminal on the shop floor," she says, adding that the team members got sidetracked with other problems before they could train employees on the new systems. "About three weeks later, we visited the sites and discovered that the employees, all on their own, had set the dumb terminals on the floor and were using the NCs exclusively. They had a GUI, they could finally interact with the rest of the world. They were surprised [that] we were surprised."

"If you have a very well-run network, you'll find that few people so much as stick a floppy into a desktop machine these days. Most people don't care what the hardware is as long as it works," Siewert says. "If it went down, then they'd be angry that we'd given them an NC. Fortunately, none of the NCs have failed."

Siewert acknowledges that the company's server requirements have increased — one midrange server will support approximately 35 clients when the system is fully deployed — but insists that the biggest problem for support technicians has been simply getting used to a new way of doing things.

"It takes a bit of a different mind-set to administer with Citrix. You're running NT on a single box with a whole lot of users. But the thought of not having to go from machine to machine — well, that's not exactly a hardship for our guys," Siewert chuckles. "The additional server load is expensive, granted, but the savings in labor costs makes up for it."

"No failures, no downtime, it's lickety-split fast, and we work better," Reese says. "There's been very little downside to this." ◗

A Thin Client Can Be a Very Tame Animal

Tools originally designed to enable thin-client computing are providing some IT managers with an unexpected benefit – better remote access

BY KEVIN BURDEN

"Hey, I used to pitch the information I got on thin clients right into the trash," says Allen Duarte, director of IS at M3 Accounting Service in Gainesville, Ga. It wasn't until Duarte saw a working setup of MetaFrame from Citrix Systems in Fort Lauderdale, Fla., that he understood how it could improve communication with his remote sites. Two other users interviewed by *Computerworld* also had installed MetaFrame to improve remote access but then found other benefits along the way, including reduced administration and heightened security. Their only complaint was MetaFrame's high total cost, which is compounded by the cost of other products it requires to work.

MetaFrame is a server-based computing system for delivering multiuser versions of Windows. It evolved from Citrix's original WinFrame product, which legitimized itself as a player when thin clients were still leading the news. MetaFrame improves on WinFrame by adding support for the Windows NT 4.0 application programming interfaces and bringing NT 4.0 capabilities to DOS, Java-based clients, Macintoshes, Unix and dumb-terminal clients.

Also, where WinFrame provided its own multiuser infrastructure, MetaFrame was expressly made to run on top of Windows Terminal Server.

Duarte began looking for an alternative to dial-up networking when he began rewriting M3's core accounting application. M3 is an accounting service for Bethesda, Md.-based Marriott International Inc. franchises in the Southeast. For years, area hotels would use modems to send their lodging data to M3's central accounting database each day.

But day-old data was no longer good enough. Data needed to pass in real time if M3 was going to invest in a new system, and that meant the dial-up connection had to go.

The new system, written in Microsoft Visual Basic, leverages the Internet.

Several times per day, hotels log in to an Internet Protocol address, which routes them directly into M3's MetaFrame server.

"There is no uploading or downloading. Their data hits our database server as it's entered," Duarte says.

But Citrix wasn't part of Duarte's initial plan. MetaFrame was brought in only after M3 failed at an attempt to use just Microsoft's Windows Terminal Server at the client sites. But Terminal Server is limited by design and performance constraints, according to Duarte, because "client locations can't print." They also can't use any other platform but Windows. Adding MetaFrame shored up Terminal Server's shortcomings, he says, "but it's there for the remote access, not so we can get rid of fat clients."

Duarte and the other MetaFrame users interviewed say they aren't looking to rid themselves of their PCs, nor do they feel MetaFrame will save them money.

"We already have the PCs and the management in place to administer them," says Wayne Doust, network engineer at A. V. Jennings Homes Ltd., a 400-employee home construction company in Sydney, Australia. "We may control IT, but we don't control the purchasing of our different departments, and MetaFrame doesn't have much of a cost benefit to sell them on."

> There is no uploading or downloading. Their data hits our database server as it's entered.
>
> ALLEN DUARTE, DIRECTOR OF IS, M3 ACCOUNTING SERVICE

MetaFrame's initial cost can be steep, users say – eight times more expensive than using just Terminal Server alone, Doust says. That's because every client requires a Terminal Server license as well as a MetaFrame license, which costs $5,995 for 15 users. Also add the cost of Client Access Licenses, if clients need to access IBM's SQL Server or other back office applications.

And clients that have more than 15 users will also need the WinFrame Load Balance Option Pack for $1,495 per server, which lets MetaFrame distribute the client load across multiple servers.

But Doust could overlook MetaFrame's initial expense because it solved his remote access problem.

The heavy file I/O of A. V. Jennings' central database made it unsuitable for wide-area network access.

The database, which controls all aspects of A. V. Jennings' construction business, from scheduling and estimating to inventory and contracts, wasn't being effectively used by draftsmen, accountants and other employees in remote locations.

But through a MetaFrame server, "we can get 30 people onto our database over a single 64K [bit/sec. Integrated Services Digital Network] link," Doust says.

Improving remote access may have been the goal, but the Citrix features users say they like most are at the heart of thin-client promises – reduced administration and centralized management and security.

For Doust, security was a bonus. Instead of users dialing in with carte blanche access to the LAN, "The MetaFrame server effectively locks them into specific applications," Doust says. "We also set up the MetaFrame server to dial users back for added security and tariffing reasons."

For Duarte, centrally located applications have eased his support hassles through a feature called shadowing. With it, administrators can remotely take control of client desktops, which he says is most useful when clients have trouble getting into the server.

"I just shadow their system to see exactly what they are doing wrong," Duarte says.

Centralized applications also foster rapid deployment, as Joseph Aina found out. Aina is a senior network analyst at Frontier Corp. in Rochester, N.Y., who began piloting MetaFrame to give one of Frontier's remote call centers dial-up access to a standard set of applications. But it became more valuable to Aina in keeping those applications current.

Aina says his call centers, which average 320 employees, need their applications updated every six months. "Just when we finished upgrading them, it was time to do it again. Now we just update the [MetaFrame] servers," he says.

That kind of administrative help is enticing Frontier to expand thin clients to its other call centers, but the company hasn't yet found a compelling enough reason to extend it beyond its remote sites. ◗

Mixed Blessing

BY LESLIE GOFF

A SINGLE product announcement in 1964 ushered in a new era of computing. The new product was both a help and a hindrance to the IT profession, a strategic advantage that over 35 years would have unforeseen consequences.

It would simplify computer purchasing decisions but complicate computer operations. It would increase the amount of work that could be accomplished but impede individual productivity. And it would create new demand for information technology professionals but diminish the supply of people who could do the job.

On Tuesday, April 7, 1964, IBM's then-CEO, Thomas J. Watson Jr., unveiled the S/360 product line — the first family of compatible computers. The six computers and 44 peripherals were all designed to provide upward compatibility, to work together and to run the same software. Plus, for the first time, the company announced software with the hardware: the OS/360 operating system, the PL/1 programming language and a compiler.

Today, the S/360 is hailed as one of the top 100 technological developments of the 20th century [CW, April 5]. It pioneered the concept of compatibility, a strategic victory for IT shops (and for IBM). It provided greater speed and power, and it introduced multiprocessing, enabling several jobs to run at once. But the new architecture, based on eight-bit memory, may have been both a blessing and a curse.

"The S/360 was the single biggest mistake in computing history," says Barry Gordon, now retired, who was at IBM at the time. "April 7 is a day that will live in infamy because it's the day the computing world became saddled with the hexadecimal numbering system."

Gordon, who later would manage the S/360 Model 40 product line, contends that the switch to a hardware architecture that used a base-16 numbering system rather than a base-10 system made computing far more complex than necessary and had a reverberating effect on the industry and the IT profession.

"Base-16 has been a source of errors and difficulty and will be forever because we are basically base-10 people," he says. "We've been stuck with it for 35 years, and it's a disaster."

With IBM's 650 or 705 base-10 machines, anyone could learn to program. Programming in base-16, Gordon says, required mathematically inclined individuals who could think more abstractly. The increased complexity, coupled with the intricacies of the operating system, "closed the door to a lot of people getting into programming," he says.

It also changed the nature of the job. Instead of a programmer sitting at a console and interacting directly with the hardware, now he handed his card set off to an operator and returned later to pick up the results.

That distancing of the programmer from the computer was inhibiting, says Ed Seidman, now a senior systems analyst at Abbott Laboratories in Chicago. In 1964, he used an early S/360 to design radar for ballistics tracking systems for North American Aviation in California.

The S/360 also prevented programmers from changing their code on the fly. If results weren't right the first time, they had to resubmit the job, wait again and eventually take the results back to an impatient user. That created a gulf between the user and the hardware that would only widen until the advent of the PC.

But on that day in April 1964, the user community was swept away. The idea that they wouldn't need to rewrite all of their software every time they needed new hardware meant a huge savings of time and money. What *Fortune* magazine had called IBM's "$5 billion gamble" yielded a huge payoff: Within four weeks, IBM had 1,000 orders for the computers and associated peripherals. Two years later the company had amassed 9,000 orders; by 1967, IBM's sales and leasing revenue had surpassed $5 billion.

1964

And the S/360's multiprocessing capabilities made companies more productive. Although individuals had to wait longer for their programs, overall projects could be completed more quickly, and more balls could be in the air at once. Seidman remembers that jobs proliferated and programmers' salaries skyrocketed.

Once the bugs were worked out, the S/360 was a performer, and it put IBM's competitors in a reactive mode.

Even the skeptical Gordon concedes, "Aside from base-16, the machines were not bad." ◗

Goff is a frequent contributor to Computerworld. *Contact her at lgoff@ix.netcom.com.*



WITH NEW ARCHITECTURE based on eight-bit memory, IBM's S/360 may have been a blessing and a curse



THE ASSOCIATED PRESS

Technology Happenings

■ **IBM** is the manufacturer of more than **70%** of the world's computers.

■ **Control Data Corp.** introduces the **CDC 6600.** Designed by **Seymour Cray,** the machine has 350,000 transistors and is the fastest computer of its time.

■ **Thomas Kurtz** and **John Kemeny** create the programming language **Basic** at Dartmouth College.

■ **Sara Lee Corp.,** maker of frozen pastries, opens the first **automated factory.**

Born in 1964

■ "Stone Cold" **Steve Austin,** World Wrestling Federation star

■ **Jeff Bezos,** founder and CEO, **Amazon.com**

■ **Bonnie Blair,** Olympic gold medalist in speed skating

■ **Dwight Gooden,** Major League Baseball pitcher, now with the **Cleveland Indians.**

Other Notables

■ **President Johnson** signs an antipoverty measure totaling more than $1 billion.

■ **Martin Luther King Jr.** awarded the Nobel Peace Prize.

■ **Ford** unveils the **Mustang** at the New York World's Fair. At $2,368 base price, 22,000 are ordered the first day.

■ **Best Picture:** *My Fair Lady*

■ ***Hello, Dolly!*** opens on Broadway, the first of 2,844 performances.

◀ **The Beatles'** first appearance on *The Ed Sullivan Show* draws 73 million U.S. viewers.

U.S. Surgeon General Luther Terry issues the first government report warning that "smoking may be hazardous to one's health."

Jerrie Mock of Columbus, Ohio, is the first woman to complete a solo airplane flight around the world.

The Pentagon reports the first of two attacks on U.S. destroyers by North Vietnamese torpedo boats in the Gulf of Tonkin. Congress passes the Gulf of Tonkin Resolution, giving the president broad powers in dealing with attacks on U.S. forces in Vietnam.

JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

Cassius Clay knocks Sonny Liston to the canvas to win the world heavyweight boxing crown. Liston was a 7-to-1 favorite.

President Lyndon B. Johnson signs the Civil Rights Act of 1964, which survives an 83-day filibuster in the Senate.

The Free Speech Movement is launched at the University of California at Berkeley. Two months later, 800 students are arrested for storming the administration building and staging a sit-in.

■ Flashback is produced with the assistance of The Computer Museum History Center in Mountain View, Calif.

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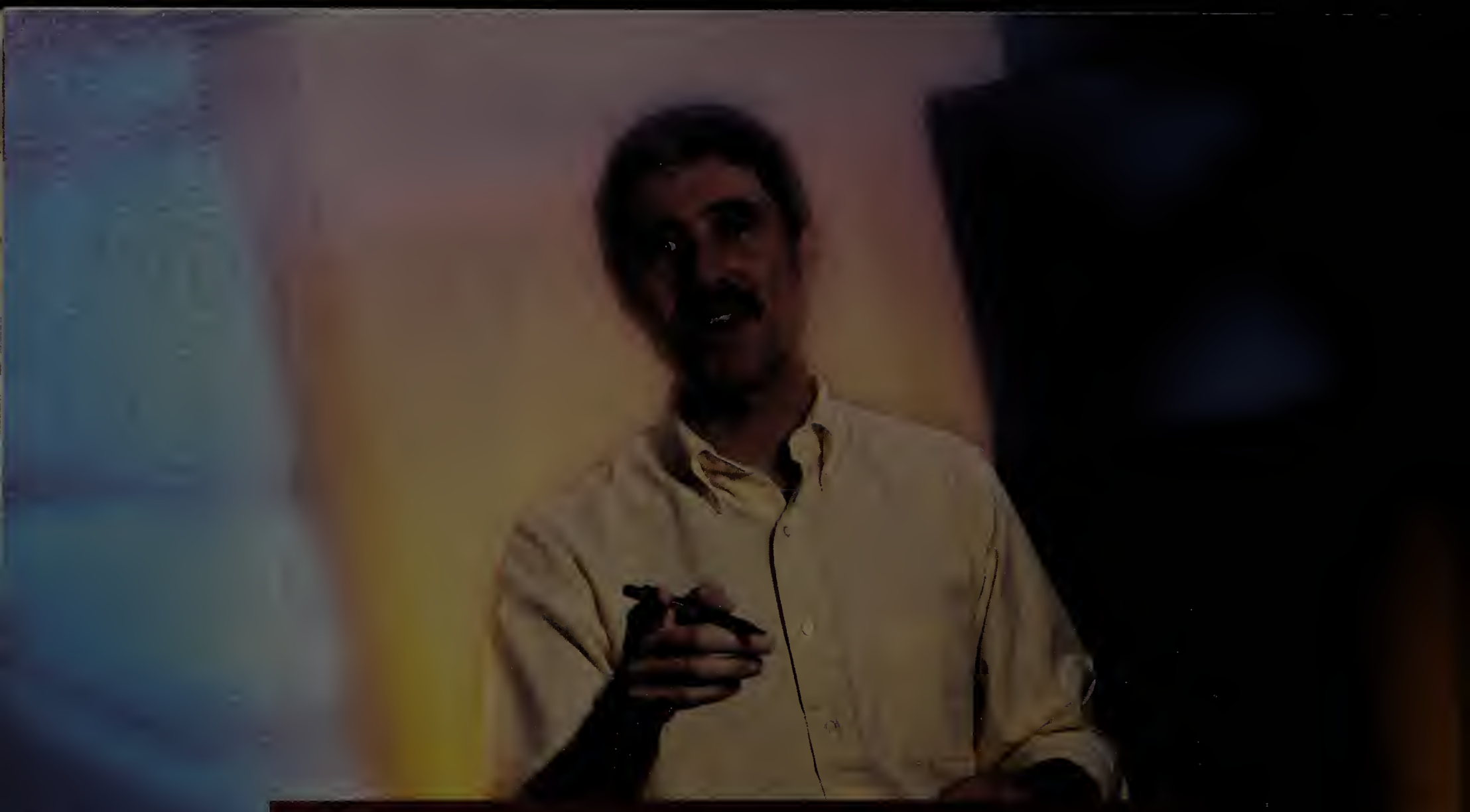
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Fran Quittel

Nationally Recognized Career Expert and Computerworld's CareerAdvisor Columnist

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COMPUTERWORLD
CAREERS The Newspaper for IT Leaders

Rocky Mountain Highs and Lows

In a limited job market, IT professionals will find pockets of opportunity in Denver, Boise and Salt Lake City

BY CHRISTINE WILLARD

THE NATIONAL SHORTAGE of information technology professionals has hit the Rocky Mountains like a spring avalanche. Government agencies and educational institutions are competing with both large and small businesses for IT people, whether they're college graduates or experienced hands. Organizations are straining to find ways to fill jobs that may stay unfilled for months. Benefits include bonuses, extra training — whatever it takes to get you on the job. There's a deep powder layer of opportunities for a wide variety of skills, including Oracle, C++, Unix, Novell, LAN and WAN, Java, Windows NT and Cobol. In-house development as well as customer service jobs are available at large corporations and small start-ups.

Denver

Denver and nearby Colorado Springs are both hotbeds, says Dave Tyner (*ftyner@uswest.com*), director of management and professional staffing at US West Inc. "It's 'Nellie, bar the door!' " he says.

Employers have come up with a variety of strategies to find and keep employees. Information Handling Services Inc. (*www.ihs.com*), an information database publisher with 600 technical employees in Denver, beefed up its benefits package. A one-year retention bonus, flexible time off and additional vacation and improved retirement plan are some of the new perks, says Cely Lewis, technical recruiter.

Stan Brown, a partner at Denver's Triad Consultants, an IT recruiting firm, agrees. He says he's seen the market for C++ and Unix slow down, but the Internet and related developments keep demand strong.

Half or more of the 70 to 80 IT jobs at the U.S. Department of Commerce's Boulder facility are typically unfilled. The agency, which develops weather-forecasting systems, hires contractors for positions like object-oriented programming, but Unix systems administrators are scarce. "A lot of people with meteorology degrees are doing programming," comments one administrator.

The competition has been especially hard on state bureaucracies, which lack the flexibility and money of private enterprise. Mollie Morton, human resources specialist at the University of Colorado at Boulder, served on the state's Information Technology Action Force last year to find ways to lure IT workers.

"We're better off than agencies like Human Services, which is desperate," she says, referring to the federal mandate that state agencies automate their welfare systems to continue to receive federal funds. Students develop skills and build experience as part of the campus' 225- to 300-person IT workforce.

With experience, IT professionals can get hired above entry level and enjoy extra pay for special projects, bonuses for bringing in other employees and having the state match bona fide job offers from other employers, all tactics developed by the state's task force.

Dennis Beery, director of systems at the University of Colorado at Boulder, says expertise in older languages, like Cobol, is hard to find. They're sometimes viewed as dead ends but are the bread and butter of internal systems like payroll and student registration.

Boise

"We're trying to address the [hiring] issue with training, working environment, looking at other things," says Mark Richardson, chief of information services at the Idaho Transportation Department in Boise (*www.state.id.us./ipc*). His department gets all Microsoft software as soon as it's released, an attraction to techies.

At Boise State University (*www.boisestate.edu*), Jim Haskett, director of the Office of Information Technology, says he "thought we'd died and gone to heaven" when the group was fully staffed recently. It lasted 10 days before one employee was hired away.

Haskett hires students from the accredited computer science program on campus. Before new hires start, he says, he finds out if their spouses are in the IT field and approaches them about job openings. "We identify them before they get to town," Haskett says.

Smaller companies like Quality Design Systems Inc. make their own luck. Dan Stratton, a database analyst at the company, says he works closely with Idaho State University's vocational technology program, where he serves on the advisory committee. "That program is booked through the year 2000 and has 100% placement," he says. His own company has had a C++ opening for quite a while.

Salt Lake City

Salt Lake City's status as the center of the Mormon religion gives it a natural advantage when it comes to people of that faith. "Other things being equal, many would be happy to come back here to live," says Peter Genereaux, president and CEO of the Utah Information Technologies Association.

Samuel Hammand, a manager at Manpower Technical, speculates that the proportion of Mormons may be decreasing as the city grows.

And Hammand cautions that the cost of living may not be as low as people from outside the region might hope.

Utah's mountain lakes and ski slopes aren't "overpopulated and expensive," he says, which helps attract a diverse labor pool to the state.

In a region that has been historically white, a growing Hispanic community makes Salt Lake City resemble Phoenix, Hammand adds. The African-American community is growing, too, but more slowly.

> Other things being equal, many [people] would be happy to come back here to live.
>
> PETER GENEREAUX, PRESIDENT AND CEO, UTAH INFORMATION TECHNOLOGIES ASSOCIATION

In Boise, Hewlett-Packard Co. (*jobs.hp.com*) ran an ad that focused on diversity in the workforce during the Super Bowl as part of its yearlong campaign. Twelve other companies have joined HP in sponsoring workshops and other events to raise consciousness about diversity.

Willard is a freelance writer in Los Osos, Calif.



DENVER RANGES

Hiring managers report paying the following average annual salaries as of February:

TITLE	EXPERIENCE 1-2 YEARS	3-4 YEARS	4-PLUS YEARS
Network administrator	$45,000	$51,000	$52,000
LAN manager	$45,000	$49,000	$54,000
Project manager, systems and programming	$45,000	$50,000	$61,000
Senior systems analyst	$47,000	$52,000	$61,000
Senior systems programmer	$52,000	$58,000	$64,000
Programmer/analyst	$39,000	$46,000	$50,000
Computer operator	$28,000	$33,000	$33,000
PC technical support specialist	$30,000	$35,000	$40,000

SOURCE: COMPUTERWORLD'S 1999 MIDYEAR SALARY SURVEY



The 1999 Regional Conferences

Chicago Area
TECHNICAL RECRUITING & RETENTION CONFERENCE
COMPUTERWORLD

Monday, August 30, 1999
Rosemont Convention Center
Chicago, Illinois

Philadelphia Area
TECHNICAL RECRUITING & RETENTION CONFERENCE
COMPUTERWORLD

Monday, September 13, 1999
Sheraton Valley Forge Hotel
King of Prussia, Pennsylvania

Washington DC
TECHNICAL RECRUITING & RETENTION CONFERENCE
COMPUTERWORLD

Monday, September 27, 1999
Fairview Park Marriott
Falls Church, Virginia

New England
TECHNICAL RECRUITING & RETENTION CONFERENCE
COMPUTERWORLD

Monday, October 4, 1999
Boston Marriott Burlington
Burlington, Massachusetts

Dallas Area
TECHNICAL RECRUITING & RETENTION CONFERENCE
COMPUTERWORLD

Monday, October 18, 1999
Wyndham Garden Hotel
Dallas, Texas

Atlanta Area
TECHNICAL RECRUITING & RETENTION CONFERENCE
COMPUTERWORLD

Monday, November 8, 1999
J.W. Marriott Hotel - Lenox
Atlanta, Georgia

Bay Area
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Monday, November 15, 1999
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Blue Cross and Blue Shield of Montana offers competitive salaries and excellent benefits including retirement, educational opportunities, and flexible work hours. To apply for any Information Systems position, please make reference to position **#CW1** and send resume with cover letter indicating areas of interest and salary requirements to:

Blue Cross and Blue Shield of Montana
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Senior Programmer Analyst

Plan, schedule and direct preparation of computer programs. Consult with personnel to clarify program intent, identify problems, suggest changes and determine extent of programming required. Assign, coordinate and review work of project team members. Develop programs from workflow charts or diagrams and convert workflow charts to language processable by computer. Design object-oriented computer software systems using C and C++, Windows NT, and SQL in a client/server environment. Gather user requirements to prepare specifications. Serve as project leader for software development projects, including providing technical direction on preparation of specifications, system test scripts and documentation, program and data record specifications, test specifications and general documentation, system flowcharts and logic diagrams, and coding, debugging, documentation testing programs.

Requirements: Master's degree (5 years college) or foreign degree equivalent in computer science, MIS, math, engineering or related field, plus 4 years of experience in offered position or in design and/or development of computer software in a client/server environment, OR bachelor's degree (4 years college) or foreign degree equivalent in computer science, MIS, math, engineering or related field, plus 5 years of experience in offered position or in design and/or development of computer software in a client/server environment. Stated experience must have included at least 2 years with C and/or C++, 1 year with SQL, 1 year with Windows NT, and 1 year with distributed systems or object-oriented development. Job located in Memphis, TN. Salary range: $51,080-70,176/yr. 40 hrs/wk, M-Friday, 8:00 a.m. to 5:00 p.m. Job order #TN6201037. Submit resumes to Barbara Galloway, TN Department of Employee Services, Job order # TN6201037. Submit resumes to Barbara Galloway, TN Department of Employee Services, Job Service Program & Technical Support, 500 James Robertson Parkway, 11th Floor, Nashville, TN 37245-1200.

Senior Programmer Analyst

Design and develop object-oriented computer software systems using C or C++ in a UNIX or PC-based client/server environment. Gather user requirements to prepare functional specifications; prepare functional specifications; develop an object model; screen design; code, test; implement and maintain software applications. Serve as a project leader for software development projects, including providing technical direction to junior personnel on preparation of specifications; system test scripts and documentation; program and data record specifications; test specifications and general documentation; system flowcharts and logic diagrams; and, coding, debugging, documentation, and testing of application programs.

Requirements: Master's degree (5 years of college) in computer science, management information systems, mathematics, engineering, science or operations research, and four years of experience in offered position or four years of experience in design and/or development of computer software in a client/server environment; OR bachelor's degree (4 years of college) in computer science, management information systems, mathematics, engineering, science or operations research, and five years of experience in offered position or five years of experience in design and/or development of computer software in a client/server environment. Stated experience must have included: at least 3 years with C or C++; and at least 2 years with object-oriented design or relational databases in a UNIX or Windows environment. Hours: 40/wk, 8:00 a.m.-5:00 p.m., M-F. Salary range $49,590-$75,159/yr. Apply to the Texas Workforce Commission, Dallas, Texas, or send a resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, J.O.# TX0612712. Ad Paid by An Equal Opportunity Employer.

Senior Database Analyst/ Developer has duties to analyze user business requirements and procedures for systems including banking/financial applications. Define data elements, relations, processes and workflows. Design, implement and support Oracle database, insuring rapid response time, data integrity and uninterrupted access by multiple users. Develop user screens, reports and forms; use of Oracle, Oracle Forms, Oracle Reports, Oracle Server Manager, Pro*C, SQL*Loader, PL/SQL, Windows; design and development of applications using C and C++. Must have Bachelor's degree in Computer Science and two years of experience as a Senior Database Analyst/ Developer or two years of experience as a Programmer. Applicant's experience must have included development of banking/financial systems, data modeling and use of Oracle. 40 hours M/F, 8:30 a.m. to 5:00 p.m. $58,000 per year. Applicant must have proof of legal authority to work permanently in the U.S. NO CALLS - SEND TWO COPIES OF BOTH RESUME AND COVER LETTER to ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 North, Chicago, Illinois 60605; Attention: Leila Jackson; Reference # V-IL 19921-J, AN EMPLOYER PAID AD

Senior Software Engineer (5 openings): Design, develop and implement computer software systems to determine feasibility of design and directs software testing procedures, programming and documentation using relational data base management systems (RDBMS). Work involves extensive travel and frequent relocation. Must have one year of experience in job offered or as a computer professional and a year of experience using RDBMS skills: 1 of A and 2 of B or 1 of A and 1 of B and 1 of C or 1 of A and 2 of C as follows: A: DB2, FoxPro, Informix, Ingres, MS-Access, Oracle, Paradox, Sybase, Unify; B: AIX, DOS, HP-UX, MVS, Novell, OS/2, Sun OS, UNIX, VAX/VMS, Windows; C: 4GL, APT, C, C++, COBOL, Case Tools, C Shell, Crystal Reports, E-SQL, Easytrieve, JAVA, ODBC, PowerBuilder, Power J, Power ++ SDesigner, SQL, Shell Script, Visual Basic. Master's degree in one of several limited fields: Computer Sci/Apps, Eng., Chem., Math, Physics or a scientific or business related field. Will accept B.S. degree with five years of experience as computer professional. Salary is $75,000 per/yr, 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Mr. Tom Dembosky, Mgr., Indiana Job Center, 350 N. Fourth Street, Indiana PA 15701. Job Order No.: 9095151

Data Engineer: St. Louis, Missouri. With close supervision, assess, estimate and plan actions to design, develop, support and administer all databases on Windows NT and UNIX platforms, including Oracle and MS SQL Server database systems. With very limited discretionary decision-making authority, conduct database design, management and application support, as well as performance monitoring and tuning, technical support, recovery and backup of Oracle and MS SQL Server databases. Requires Bachelor's degree in Computer Science, MIS, Math, Eng'g or Business Administration. Must have 1 yr. experience in job offered or 1 yr. as Database Analyst or Database Administrator, including 1 yr. exp. Performing administration (including backup and recovery) of Oracle and Microsoft SQL Server on UNIX and NT platforms. M-F; 8:00-5:00; $58,375/yr. Send resume to: Mrs. J. Gaston, Missouri Division of Employment Security, 13131 New Halls Ferry Road, Florissant, MO 63033, Job #: 149843.



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ASSOCIATE STATISTICAL ANALYSIS SYSTEMS PROGRAMMER to design, develop, analyze, modify, input, test, implement and maintain SAS programs for credit analysis and credit scoring applications using Base SAS, SAS AF and Visual Basic on UNIX, Windows and DOS operating systems in a client/server environment; Generate ad-hoc statistical reports, output SAS datasets to appropriate file formats, and create macros. Require: Bachelor's degree in Computer Science, Management Information Systems, an Engineering discipline, or a closely related field; Must have a demonstrated ability to perform the listed duties gained through previous work experience/academic coursework. Salary: $42,242 per year, 8:00 am to 5:00 pm, M-F. Apply by resume to: Samuel Ezeilo, Technical Recruiter, Equifax, Inc., 1600 Peachtree St., N.W., Atlanta, GA 30309; Attn. Job MS

Software Engineer, Network Systems: Research, design, develop, test, modify & implement sophisticated network systems/computer sub-components including Local Area Networks (LAN) and wireless communication. Develop system to test performance/implement necessary modification. Prep tech manuals, train end-users/provide high-end tech support. Design, develop, maintain/support applications software. Use Novell 3.11, OS/2, Token Ring, 3270 Emulation. Job is in Miami, FL. Req: Bachelor's in Computer Science + 3 yrs exp or 3 yrs in position(s) involved w/Network Design & Development. Five yrs exp in job duties of position or in Network Design/Development can be substituted for req of Bachelor's in Computer Science + 3 yrs exp. $56,910/yr, 40 hrs, 9am-5pm. Submit resume to: Bureau of Workforce Program Support, P.O. Box 10869, Tallahassee, FL 32302-0869. Re: JO# - FL1938018.

Information Technology Director, North America (Manhattan) Act as a senior member of the corporation's North American IT Management Team, to develop, acquire, deploy, program, maintain, operate & support users with regard to, hardware & software components of networked information systems in the stock photo industry, using ORACLE RDBMS 8.0, ORACLE D2K, ORACLE WEB 3.0 and ConText 2.0 on Windows NT: Internet (java scripting), Frame Relay, TCP/IP protocols. Requires some travel to supervise subordinate staff at Company sites in North America. Requires B S.Computer Science, 3-5 years experience in int'l stock photography industry a must, providing design, development, deployment and management of proprietary business systems. Fax resume to 212-505-3541 Atten IT1.

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All pos req BS in Comp Sci, Engg, or Math & a min of 2 yrs rel exp as P/A, Comp Sy Analyst, or Comp Prog. Mail your res to HR Dept, WTR, Inc, 70 West 36th St, Ste 702, New York, NY 10018, with cov letter & ref no.

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SENIOR SYSTEMS ANALYST. Analyzing, designing, developing, testing, debugging, documenting, and maintaining application systems applying computer science, engineering, and mathematical analysis. Work involves extensive travel and/or frequent relocation. Must have (a) Masters degree in one of several limited fields: computer applications, engineering or math, or science, and (b) six years of experience as a S/W engineer or computer professional, six years using DB2, and at least two years using IEF, Composer or Cool; Gen. Salary is $89,000/yr., 40 hrs./wk., 8:30 a.m. - 5:30 p.m. Qualified applicants send resumes to Data Dynamics Systems, Inc., 4028-H Dunwoody Park, Atlanta, GA 30338.

Network Engineer - Telecomet Inc., a NY based telecommunications eng'g company which serves the needs of companies requiring IT & communications solutions, presently requires the services of a Network Engineer. The successful candidate will: Design & install local & wide area networks for clients; analyze network traffic & offer solutions to increase the speed & security of info transfer. Req'd: BS Comp. Sci., Math, Eng'g or Bus. Admin + 1 yr exp in job offered or as Network Consultant. The employer will also accept employees w/a Master's in aforementioned fields & no experience. Must have experience w/TCP/IP, Windows NT, and SQL.To apply, send a resume to Telecomet Inc. HR Department, 375 Park Ave., 7th floor, NY, NY 10152.

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Software Engineer wanted F/T by Computer Consulting & Software Dvlpmt Co. in Piscataway, NJ for job loca. in NY & NJ. Must have 6 mos software experience. Masters in Info Sys, Comp Sci. Engg, Elec or Electronic req'd. Respond to: HR Dept, Technosoft, Inc, 5 Carriage Drive, Piscataway, NJ 08854.

Engineering Programmer (Validation Consultant) wanted by IT Consulting Co. in Bridgewater, NJ for job in Newark, DE. Must have 6 mos exp producing computer systems validation documentation incl 510 K submissions to FDA for biomedical devices or have 6 mos exp as S/ware Engr or Regulatory Affairs/ Validation Consultant. Masters in Comp Sci, Engg or Bio Engg req'd. Respond to: HR Dept, Taratec Development Corp, 1170 Rte 22 East, Ste 302, Bridgewater, NJ 08807.

Manager of Technology, Batch Plus Team - needed by Computer Modeling & Optimization S/ware & Services Co. in Cambridge, MA. Must have Masters in Comp Sci or Mgmt Info Systms and 3-5 yrs exp in Windows applic dvlpmt. Respond by resume to: Director of Recruitment, HR Dept, Aspen Technology, Inc, 10 Canal Park, Cambridge, MA 02141.

Software Engineer wanted by Comp. Consulting & S/ware Dvlpmt Co. in Hackensack, NJ. Must have Bach. in MIS, Comp Sci or Engg and 5 yrs exp analyzing, dsgng & dvlpg s/ware systms using Sybase, SQL Server, Oracle & Powerbuilder and implmtg & configuring TCP/IP and IPX protocols. Respond to: HR Dept, Vision Consulting Group, Court Towers, 39 Hudson St, 3rd Fl, Hackensack, NJ 07601.

Patel Consultants Corporation, an IT Co. in Union, NJ, is looking to fill the following positions:
i) Senior Programmer Analyst - w/5 yrs exp using C++ and/or Visual C++ in both UNIX & Win NT envrmt to dvlp C/S applics. Must have BS in Comp Sci or Engg.
ii) Programmer Analyst - w/3 yrs exp in Oracle dvlpmt writing PL/SQL code & gathering reports using SQL*Plus. BS in Comp Sci or Engg req'd.
iii) Programmer Analyst - to work in PowerBuilder 6.0 dvlpmt using PowerBuilder Foundation Class Library (PFC) & Relational D/base manager. BS in Comp Sci req'd.
Respond to: HR Dept, Patel Consultants Corporation, 1525 Morris Ave, Union, NJ 07083.

Project Manager (Sales Force Automation) needed by Global Entertainment Co. in Manh. Must have 1 yr exp in implmntn of support & specialization of Sales POWER s/ware applic or 1 yr exp in S/ware Dsgn & Business Process Analysis of Sales POWER. Masters in Math also req'd. Respond to: HR Dept,Universal Music Group, 825 Eighth Ave, New York, NY 10019.

Software Engineer wanted F/T by Computer Consulting & S/ware Production Co. in Lexington, MA. Must have 3 yrs experience creating Client Server applics for Win 95/NT platforms using Win NT/95 prgmg lang, MS SQL Server 6.5, Sybase & Oracle 7.0. Bachelors any Engg field req'd. Respond to: HR Dept, Equinox Solution, Inc, 57 Bedford St, Ste 204, Lexington, MA 02173.

Computer Systems Analyst wanted F/T by Computer Consulting Firm in Palisades Park, NJ. Must have 2 yrs exp dsgng & dvlpg PC based info systms & EDI systms; dvlpg, customizing & upgrading applics s/ware using "Hangul" 3.0, "Hansol" Win 98 & "Hansol" Office 98 and dvlpg s/ware interfaces w/mini & mainframe computers using Win NT, DOS/Unix, FoxPro, Java, VB & Novell. BS in Comp Sci req'd. Respond by resume to: Hypercom Technology, Inc, 346 Broad Ave, Palisades Park, NJ 07650. Fax: 201-585-8891. Attn: Paul Moon.

Software Engineer needed by Bedford, MA. Co involved in Security & Identification S/ware. Must have BS in Systems Engg & 1 yr software engg exp. Respond by resume to: Christine Murphy, HR Dept, Security Dynamics Technologies, Inc., 20 Crosby Dr., Bedford, MA 01730.

COMPUTER SYSTEMS MANAGER DATABASE ADMINISTRATOR (DBA)

DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF CUSTOMER & CONSERVATION SERVICES

The New York City Department of Environmental Protection seeks a data base administrator with extensive computer experience. The DBA will be responsible for managing a staff of 4 technical professionals in defining and maintaining DB2 tables, data bases and objects for the DEP's Customer Information System (CIS). CIS is operated in an MVS/CICS/DB2 environment. Additionally, the DBA will monitor the application's performance and system resources, and will implement actions to ensure that they are performing optimally. Also, the DBA will define and implement backup and recovery procedures, and assist the programming staff with SQL coding.

Applicants should have a minimum of 5 years of mainframe DB2 data base administration and management experience in a CICS environment. Also, applicants should be able to invoke, monitor and control DB2 utilities such as Runstats, Reorgs, Check, Loads and Unloads, and be familiar with performance monitoring tool such as Omegamon/DB2.

Excellent verbal and written communication skills are also required.

Salary will be commensurate with experience and education.

All interested candidates must submit 3 copies of their resume and salary history to:

ZoeAnn Campbell
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CW 419

PROJECT MANAGER to plan, direct and coordinate projects related to the design, development, implementation, maintenance and support of software systems for financial applications using BULL DPS 9000, DPS7000, UNIX, PC/AT, GCOS8, GCOS7, COBOL, MF-COBOL/Workbench, TSS, IDS-11, DMIV-TP, TP8, TPFF, Tax, GMAP, Glink, FTP, TDS, IQS, Shell programming, MS-DOS, MS-Windows, FoxPro and SQL in stand alone, multi-user and networked environments; Ensure that goals and objectives of projects are accomplished within prescribed time frame and funding parameters; Establish work plan and staffing for each phase of project; Confer with project staff to outline workplan and to assign duties, responsibilities, and scope of authority; Prepare project reports for management and clients; Confer with project personnel to provide technical advice and to resolve problems. Require: M.S. degree (or equivalent) in Computer/Electronics Engineering with two years of experience in the job offered or in the related occupation of Software Engineer/Consultant; A B.S. degree with an additional five years of progressively responsible experience in the field will be considered equivalent to an M.S. degree; Extensive paid travel on assignment to various client sites within the U.S. is required. Salary: $65,000 per year, 8 am to 5 pm, M-F. Send resume to: Lee Harwood, CMA Consulting Services, 2971 Flowers Road, South, Suite 280, Atlanta, GA 30341. Attn: Job BG

Engineering Practice Management Director - Ensure the consistent delivery of high quality services to company clients. Services include the transformation of Legacy software systems to 3-tier client/server applications by the design and development of company specific software tools. Responsible for the delivery processes followed by all company project teams. Documents the delivery processes, train company personnel, continuously review the process for enhancements, collaborate with project managers to ensure the processes are being followed and obtain benchmark data from external sources to verify our competitiveness in each delivery phase. Requirements include a Bachelor's Degree in Computer Science or related Engineering field, or equivalent; with at least 2 years of experience in job offered or with 3-tier client/server software development. Salary $80,000-$90,000/year, 40 hours/week. Applicant must have unrestricted authorization to work in the United States. Please respond with two copies of resume to Case No. 81336, PO Box 8968, Boston, MA 02114.

SENIOR SOFTWARE ENGINEER: Will design and implement software for distributed enterprise data access using CORBA on Windows NT and UNIX platforms. Particular software development responsibilities will include data access using the ODBC interface; maintenance and integration of third-party tools with the main software application on the Windows NT platform; build test, deliver the software on Windows NT platform. Participate in design and implementation of improvements to subsequent versions, and provide customer technical support in the installation and use of software. Requires: MS in Engineering with 2 years experience in Object-oriented design and implementation. Must have demonstrated ability in design and implementation of software using C++ for accessing ODBC data sources. Knowledge of relational databases, SQL, Windows NT and UNIX platforms. 40 hrs/wk (9:00 a.m. to 6:00 p.m.); $67,000/yr. Send two (2) resumes/respond to: Case #81355, PO Box 8968, Boston, 02114.

Lead Database Developer (Snr Software Eng) to lead a team of software developers in providing system devlpmnt & integration services to clients to support their customer marketing relationship management systems. Design & implement relational database management systems, data warehouses & household program applications in UNIX using SQL in C & C++. Will analyze business requirmnts, document business process flow, prototype the user interface & capture all required business info & interaction. Analyze & evaluate hardware, choose software tools & components for development; design & develop client/server applications; identify & implement application wide reusable components & code, user interface design, development & controls. Design & implement Visual C++ based 32 bit Windows GUI applications; implement OLE objects & lead C++ application framework development. Design & implement 2 & 3-tiered client/server applications; develop database interface components using 3rd party database libraries, e.g. DB Tools H++. Perform relational database administration of very large databases (VLDB) for decision support. Requires a Master's in CS, EE or related field plus 1 yr in job offered OR 1 yr exper in design & implementation of very large databases ("VLDB"). Alternatively, will also accept a Bachelor's in CS, EE or related field plus 3 yrs in job offered OR 3 yrs exper in design & implementation of VLDB. Candidate must also possess demonstrated expertise developing database applications in UNIX using SQL in C or C++; demonstrated expertise in relational database administration; demonstrated expertise developing household program applications in a database environment; and demonstrated expertise in client/server applications development using object oriented case tools & methodologies to perform data warehousing. Sal: $62,000/yr; M-F 9:00-5:00. Send resumes to: Case Number 81255, P.O. Box 8968, Boston, MA 02114. EOE. Applicants must be U.S. workers eligible to accept employment in the US on a full-time basis.



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- Oracle

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- ColdFusion, HTML, Javascript
- MCSD Certified

Sr. Programmer/Analyst
(multiple openings)
- PowerBuilder
- Unisys, COBOL, RDMS, DMS, ECL
- Visual Basic, SQL, Relational Databases
- Lotus Notes

Sr. Database Developer
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Also looking for **PROGRAMMER/ANALYSTS** with a Bachelor's & 2 yrs. of exp. in analysis, design, development, implementation & maintenance of software applications in the above listed areas. Candidates must be willing to travel & relocate. Send resume to: Recruitment CWW, Infotech Consulting, 3461 Market St., Ste. 303, Camp Hill, PA 17011 fax: 717-731-9857; e-mail: vyohn@icibsl.com. Visit our web site at http://www.icibsl.com

Design Kit Developer (Applica. Specific Integrated Circuits (ASIC) Technologies Engr)-Use SUN workstations, X-windows, UNIX, C, Shell Scripts (incl'g AWK & Korn Shell) digital simulators (incl'g Verilog-HDL/VHDL) Magic or TSSI to develop, test, maintain & support Applica. Specific Integrated Circuits (ASIC) digital simulation libraries/models/cells & shell scripts tools develmt. Interface with test/design engrs to resolve ASIC design issues related to digital simulation models. Allentown, PA loc. 40 hrs/wk, 9:00 am-5:00 pm, $74,000/yr. Ph.D. in Comp Sci/Comp Engr'g + 1 yr exp in job offered or M.S. + 4 yrs exp may be substituted for Ph.D. & 1 yr exp in job offered. Must have proof of legal authority to work in the U.S. JO#8048161. Report/Submit resume to the PA Job Ctr at: Allentown Job Ctr., 160 Hamilton St., Ste. 500, Allentown, PA 18101-1994.

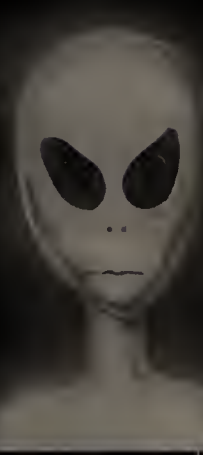
SOFTWARE ENGINEER to design, develop, test and maintain software for customizing AutoCAD applications using object oriented methodologies, ObjectDBX, ObjectARX and Autodirect libraries; Develop drivers and configuration tools for scanners and plotters; Develop GUIs using Visual C + + and Watcom C + +. Require: M.S. degree (or equivalent) in Computer Science, or a closely related field, with 1 year of experience in the job offered; A B.S. degree with five years of progressively responsible experience in the field will be considered equivalent to an M.S. degree; Extensive travel on assignments to various client sites within the U.S. is required. Salary: $60,000 per year, 8:00 am to 5:00 pm, M-F. Apply by resume to: Kaushal Tripathi, President, Objects on Net Inc., 330 Carriage Chase, Fayetteville, GA 30214; Attn: Job RA

SYSTEMS ANALYST: Analyze user requirements, Design and Develop systems, procedures to automate data processing and to improve existing business processes and computer systems. At least 6 mos experience with Teradata, to include c/s tools like Visual Basic, Visual C++, OOP, RDBMS's like Teradata, Oracle, SQL Server, MS Access in Windows Environment. Bachelor of Science in Computer Science, Engineering, or Math-related, and two years experience in job offered or as software engineer required. Microsoft Certified Professional required. Must be willing to travel (100%). $45.50/hour. Qualified applicants submit resume to Kim Speidel, Human Resources Administrator, JLS Software Services, LLC., 1995 North Park Place, Suite 220, Atlanta, Georgia 30339.

Software Engineer. Analyzes software requirements, evaluates interface between computer hardware and software, and formulates designs of software systems, programming, debugging and integration testing and documentation, including Object-Oriented information management systems using n-tier client-server technology, Computer Telephony, C++, Windows NT based systems and Windows NT internals, GUI development, Visual Basic (VB), Relational Database Management Systems (ORACLE, SQL-SERVER), and OLE/Active X. Conduct internet web development using JAVA, HTML, VB and middle-ware libraries such as Distributed Component Object Model (DCOM) and Active Server Pages (ASP). Must have a M.S. in Computer Science OR Engineering. Must have one academic course each (OR six mos exp each) in the following areas: Software Design and Production Methodology; Message Oriented Middle-ware; and Algorithm Design and Analysis. Must have one yr exp in internet web development, ORACLE, DCOM, Computer Telephony, JAVA, HTML, and ASP. Must have two yrs exp in designing & developing Object-Oriented information management systems using n-tier client-server systems, C++, VB, OLE/Active X, SQL-SERVER, & Windows NT. This may be gained before, during, or after degree, and may be evidenced by employer testimonial(s). 40 hrs/wk, 8:00 am - 5:00 pm, $95,000/yr. Must have proof of legal authority to work indefinitely in U.S. Send resume, cover letter, and academic transcript in **duplicate** to Job Order No. 615607, Jobs and Training Division, VT. Department of Employment and Training, P.O. Box 488, Montpelier, VT 05601-0488.

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Manager of Computer Operations: Direct and coordinate activities of workers engaged in computer operations; adjusts hours of work, priorities, and staff assignments to ensure efficient operation, based on work load. Plans and develops policies and procedures for carrying out computer operations and meets with subordinates and vendors. Knowledge of software consultancy industry and relational database management systems (RDBMS). Work involves extensive travel and frequent relocation. Must have at least one year of experience with RDBMS and managerial skills. Master's degree in Computer Science/Applications, Engineering, Math, Physics or business related field. Will accept a Bachelors degree with 5 yrs. experience as a computer professional. Salary: $70,000 per/yr, 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Mr. Richard Introcaso, Mgr., Beaver County Job Center, 120 Merchant Street, Ambridge, PA 15003 Job Order No.: 6024447

Software Engineer (JON 151738) Research, design, develop, test, and implement computer software systems in conjunction with hardware product development using SAP R/3 and ABAP/4 in UNIX and Windows operating systems. Requires Bachelor's degree in comp. sci., sys. anal., CIS, comp. appl., comp. sci & eng., comp. eng., elect. eng., electronic, eng., physics, or math, or its foreign educational equivalent, plus 3 years experience in the job offered. M-F, 40 hrs/wk, $80,000.00/yr. The job order number for the job opportunity is 151738. Send resume along with JON 151738 to Ms. Shirley J. Gregory, Missouri Division of Employment Security, 1411 Main Street, Kansas City, Missouri 64105. NO CALLS, PLEASE.

Software Engineer: Software Engineer to analyze, design, develop, test and implement software applications, analyze software requirements to determine feasibility of design, direct software system testing procedures using expertise in Oracle 7.3, Oracle Forms, Developer 2000, Sun Solaris and operating systems such as DOS and Unix. **Requirements:** Bachelor's Degree in Computers, Engineering or related field and three years experience as a Software Engineer or Computer Programmer and knowledge of Oracle 7.3, Oracle Forms, Developer 2000, Sun Solaris and operating systems such as DOS and Unix. **Salary:** $70,000 per year. **Working Conditions:** 8:00 A.M. to 5 P.M., 40 hours/week. **Apply:** Local Office Manager, Pittsburgh South Job Center, 2100 Wharton Street, Pittsburgh, PA 15203. Refer to Job Number 6024289.

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Senior Systems Analyst. Redesign existing banking application into a scalable, distributed client-server. Responsible for requirement analysis and object oriented design of a new 3-tier system. Implement clients and servers and system migration into production. Bachelors degree required in Computer Science, Electrical Engineering or Computer engineering plus 4 years of experience in the job offered or 4 years experience as a Systems Analyst. At least two years of experience must include C, C++ and design of Encina application on UNIX platform. Full time @ $62,400 per year. Apply at the Texas Workforce Commission, Dallas, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, JO#TX0610558. AD paid by an Equal Opportunity Employer.

SOFTWARE ENGINEER: Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in RPG 400, DB2/400, and QUERY 400. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer, knowledge of RPG 400, DB2/400, and QUERY 400. Salary: $57,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Mr. Tom Rusnack, Charleroi Job Center, 10 Paluso Drive, PO Box 210, Charleroi, PA 15022, Job No. 8048977.

Senior Software Engineer (2 Openings): Designs, develop and implement computer software systems to determine feasibility of design and directs software testing procedures, programming and documentation using PeopleSoft and related software. Must have 1 year experience in job offered or as a computer professional and 1 year of experience using PeopleSoft. A Master's degree in one of several limited fields: Computer Sci/Apps, Eng., Chem., Math, Physics or a business related field. Will accept a B.S. with 5 years of experience as a computer professional. Salary is $105,000 per/yr, 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Ms. Charlene Cogley, Mgr., Beaver Falls Job Center, 2103 Ninth Avenue, Beaver Falls, PA 15010. Job Order No.: 7048883.

Database Administrator - client sites in metro Boston area; (Co. loc in Burlington, MA). Analyze, estimate user needs/requirements; determine specs/parameters; perform database admin; implement backup/recovery procedures; performance tune. Use: Oracle 7, SQL DBA, HP-UX, shell scripts. Bachs/Comp. Sci or Engg or Math. 3yrs/exp. in job offered. 40hrs/wk (9-6; M-F) $55,000/yr. Send resume in dupl to: Case #81341, PO Box #8968, Boston, MA 02114.

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Programmer Analyst - Plan, develop, test and implement client/server applications using C and Visual Basic. Reqs: Bach.'s in Comp. Sci., Systems Analysis, Comp. Info. Systems, Comp. Engg., Electrical Engg., Electronic Engg. or Mathematics or its foreign educ. equiv. plus 2 yrs. exp. in the job offered. Will accept 3 yrs. of college educ. plus 3 yrs. exp. in the job offered in lieu of the required educ. and exp. Will also accept any suitable comb. of educ., training and/or exp. which would quality an applicant to perform the duties of the job offered. M-F, 40 hrs/wk, 8a-5p, $45,000/yr. Must have proof of legal authority to work in the US. Send resumes to Iowa Workforce Center, 215 Keo Way Des Moines, Iowa 50309-1727. Please refer to Job Order #1100857. Employer Paid Advertisement.



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Lead Systems Technician (Memphis, TN)
- Six years with the design, development & maintenance of systems
- Five years of programming experience (preferably w/ at least two years ABAP)
- Three years SAP functional knowledge

Database Administrator (Memphis, TN)
- Three to five years of database exp. with either admin. or application programming
- One year of UNIX and Oracle experience

Project Leader (Memphis, TN)
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- Two years SAP application system
- Three years solid programming experience

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Senior Systems Technician (Liberty Corner, NJ)
- Two years relational database experience
- Two to four years of Powerbuilder development and support
- A strong preference to version 6.0 or higher is desired, however, candidates that understand (OO) Object Orientation will be considered

Lead Developer/Analyst(Liberty Corner, NJ)
- One to two years functional **Business Objects** Report and OLAP development
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Applications will be accepted until the position is filled. Send a detailed resume, three letters of reference, and academic transcripts to Professor James E. Goldman, Code CW, Department of Computer Technology, Purdue University, 1421 Knoy Hall of Technology 242, West Lafayette, IN 47907-1421. Questions should be directed to Professor Goldman at (765) 494-9525 or via e-mail at jegoldman@tech.purdue.edu. Visit us on the web at http://tech.purdue.edu/cpt/. Purdue University is an equal opportunity, affirmative action employer.

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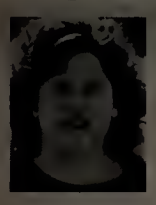


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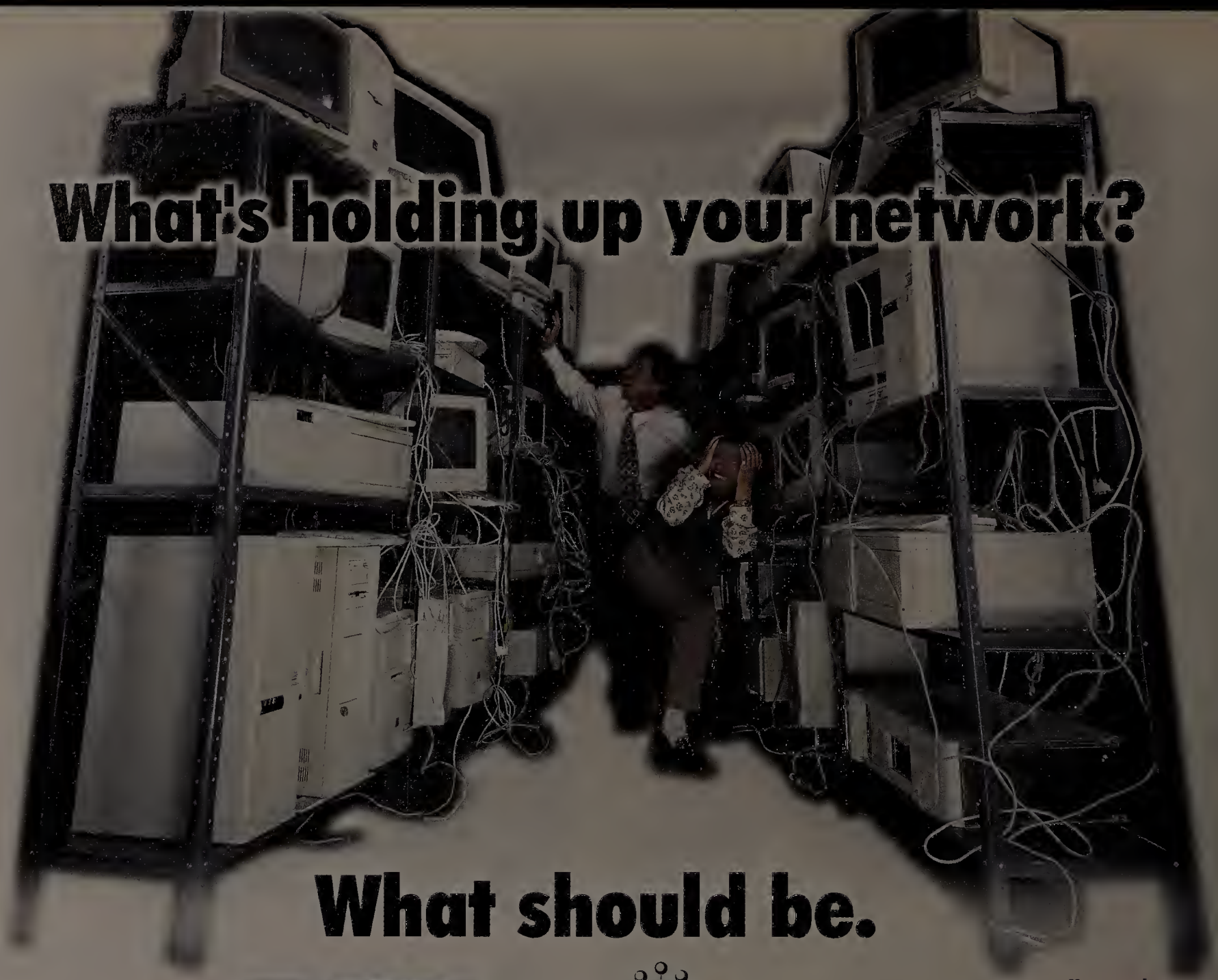


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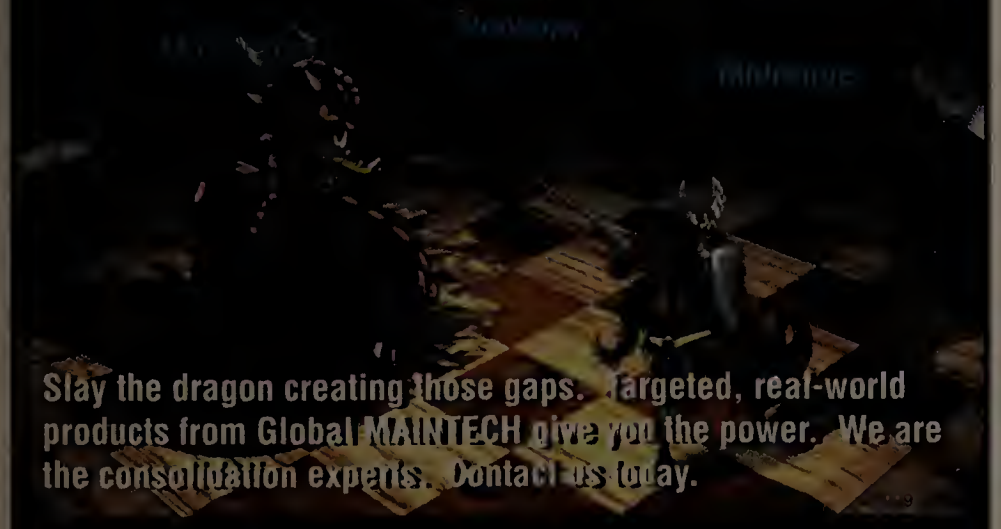
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COMPAQ HURTS, BUT INTEL HELPS

Chip maker's profits signal PC market health

BY AMY MALLOY

COMPAQ COMPUTER CORP.'S (NYSE:CPQ) announcement that its first-quarter earnings will be lower than expected sent its stock into decline and slightly hurt technology stocks in general early last week. But Intel Corp.'s (Nasdaq:INTC) announcement a few days later of slightly higher-than-expected earnings indicated that the technology market is in good shape overall, analysts said.

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"Things were blown out of proportion," said Mona Eraiba, senior vice president at Gruntal & Co. in New York, referring to the reaction to Compaq's earnings announcement.

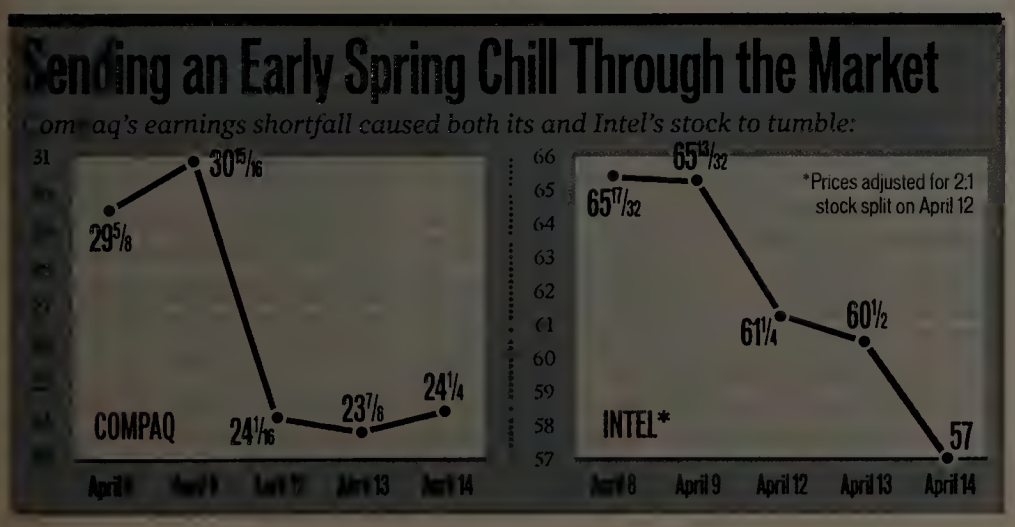
Compaq said it expects to report a profit of about 15 cents per share; analysts had expected 32 cents. Following the announcement last Monday, Compaq's stock dropped 22%, to $24.06. Compaq attributed the earnings drop to industrywide competitive pricing and lower demand for PCs.

The news also hurt other PC stocks. Dell Computer Corp.'s (Nasdaq:DELL) stock dropped $1.75, to $41.81. Hewlett-Packard Co. (NYSE:HWP) slipped $1.25, to $68.38. Compaq suppliers Microsoft Corp. and Intel also took hits.

But the fact that Intel was still making money was a positive sign, analysts said. Intel announced first-quarter revenue of $7.1 billion and earnings of $2 billion, or 57 cents per share, which was 2 cents higher than expected. Eraiba said Intel's projection that its earnings will be flat or slightly down in the second quarter ending June 30 is conservative and based on seasonal trends. "It's business as usual," she said.

Paul Mansky, associate analyst at U.S. Bancorp Piper Jaffray Inc. in Minneapolis, rates Intel a Strong Buy and gives Compaq a Buy rating, listing it as a good long-term holding.

Mansky said Intel is a good indicator of technology stocks' health because it doesn't deal with channel or supply-chain issues. Its direct link to the vendors makes it a better sign of end-user demand, he said.



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AZPN	56.87	6.12	Aspen Technology Inc.	8.56	-0.88	-9.3
ADSK	49.43	21.62	Autodesk Inc	28.44	-0.88	-3.0
AVID	47.75	11.06	Avid Technology	20.63	1.88	10.0
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CHKPF	56.00	10.87	Checkpoint Software Tech. Ltd.	30.63	-2.56	-7.7
CTXS	53.75	23.12	Citrix Systems Inc.	32.00	-0.06	-0.2
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SYMC	32.62	8.68	Symantec Corp.	17.53	4.03	29.9
SNPS	61.25	24.50	Synopsis	45.00	-2.75	5.8
SCTC	30.87	7.81	Systems & Computer Technology	12.75	3.00	30.8
BAANF	55.50	6.87	The Baan Co. N.V.	8.00	1.03	14.8
VNTV	39.75	5.00	The Vantive Corp.	9.75	-1.13	-10.3
TSAI	51.00	27.06	Trans. Sys. Arch.	35.75	0.88	2.5
VRTS	90.12	23.75	Veritas Software Corp.	82.00	2.13	2.7
WIND	34.43	11.25	Wind River Systems Inc.	14.25	0.31	2.2
TELECOMMUNICATIONS CARRIERS OFF -0.5%						
ATI	102.68	42.25	Airtouch Communications (H)	93.81	-5.81	-5.8
AT	71.43	38.25	Alltel Corp. (H)	71.31	3.56	5.3
AIT	69.37	41.50	Ameritech Corp.	63.13	-0.63	-1.0
ANDW	24.37	10.37	Andrew Corp.	13.06	1.00	8.3
T	64.12	32.25	AT&T (H)	56.44	-0.77	-1.3
BCE	51.06	25.62	BCE Inc.	48.00	1.63	3.3
BEL	61.18	40.43	Bell Atlantic	58.13	2.94	5.3
BLS	50.00	30.50	Bell South	41.19	-2.38	-5.5
CSN	23.43	8.50	Cincinnati Bell Inc.	20.38	-1.94	-8.7
CMCSK	78.43	32.62	Comcast	64.94	-2.00	-3.0
CQ	42.75	21.75	Comsat Corp.	30.88	2.00	6.9
COX	82.56	41.50	Cox Communications Inc.	69.81	-7.13	-9.3
GSTRF	36.12	8.31	Globalstar Telecom. Ltd.	19.94	1.63	8.9
GTE	71.81	46.56	GTE Corp.	66.88	2.75	4.3
NXTL	42.50	15.37	Nextel Communications	38.38	-0.63	-1.6
SPOT	64.62	26.37	Panamsat (L)	28.56	-1.44	-4.8
QCOM	177.00	37.75	Qualcomm (H)	149.75	3.63	2.5
SBC	59.93	35.00	SBC Communications	51.69	-0.25	-0.5
FON	114.62	54.43	Sprint Corp. (H)	100.13	-7.75	-7.2
TDS	59.81	30.62	Telephone and Data Systems (H)	59.81	1.94	3.3
USW	66.00	46.81	US West	54.56	-1.50	-2.7
VIA	48.75	24.62	Viacom (H)	40.44	-5.13	-11.2
WCII	54.62	10.25	Winstar Communications Inc. (H)	46.38	4.38	10.4
WCOM	94.25	39.00	MCI Worldcom Inc.	86.63	-1.19	-1.4
SERVICES UP 1.3%						
ACXM	31.25	16.50	Acxiom Corp.	25.19	2.31	10.1
ACS	51.75	22.37	Affiliated Computer Servs	42.88	-0.13	-0.3
AMSY	40.25	19.25	American Mgt. Systems	29.00	0.19	0.7
AUD	42.62	30.81	Automatic Data Processing	40.44	-1.06	-2.6
BSYS	59.37	35.12	Bisys Group, Inc.	55.88	0.69	1.2
CATP	58.37	10.62	Cambridge Technology Ptnrs	14.13	0.31	2.3
CEN	40.50	24.00	Ceridian	34.81	-0.81	-2.3
CBR	40.87	13.31	Ciber Inc.	18.56	-0.25	-1.3
CDO	30.87	10.75	Comdisco (H)	23.88	1.88	8.5
CHRZ	50.50	9.25	Computer Horizons Corp.	12.81	2.88	28.9
CSC	74.87	46.25	Computer Sciences	57.75	-1.31	-2.2
OST	70.56	34.00	Ost Systems Inc.	60.56	-2.94	-4.6
EDS	54.00	30.43	Electronic Data Systems	50.50	0.63	1.3
FDC	44.50	19.68	First Data Group	41.00	-0.69	-1.6
FISV	56.37	36.75	Fiserv	54.13	1.88	3.6
IT	35.62	17.31	Gartner Group	20.56	-0.50	-2.4
KEA	60.93	17.25	Keane	19.38	-1.81	-8.6
NOC	55.25	26.18	National Data	42.13	0.44	1.0
PAYX	55.06	33.12	Paychex, Inc.	51.34	2.28	4.6
REGI	28.12	4.00	Renaissance Worldwide	5.19	-0.13	-2.4
REY	23.75	12.62	Reynolds & Reynolds	18.56	0.31	1.7
SFE	120.00	17.12	Safegard Scientifics (H)	85.56	-10.06	-10.5
SAPE	82.87	24.25	Sapient Corp.	59.75	-7.50	-11.2
SMS	86.50	40.06	Shared Medical Systems	56.75	1.19	2.0
SDS	41.93	21.68	Sungard Data Systems	32.13	3.94	10.9
SYNT	32.62	8.68	Syntel Inc.	17.53	4.03	29.9
TECO	53.12	14.50	Tech Data	23.00	0.38	1.7
TSS	26.25	14.43	Total System Services, Inc	19.75	0.75	3.9
TSAI	51.00	27.06	Transaction Sys. Architects	35.75	0.88	2.5
NETWORK UP 2.7%						
COMS	51.12	20.00	3Com Corp.	20.75	-1.25	5.7
ADCT	52.25	15.75	ADC Telecommunications Inc	44.13	6.50	-12.8
ANTC	29.68	11.50	Antec	22.56	-0.19	-0.8
ASND	102.56	32.62	Ascend Communications Inc.	89.88	-7.69	-7.9
BNYN	19.37	2.12	Banyan Systems Inc.	15.83	-1.06	-6.4
CS	15.31	6.62	Cabletron Systems	7.25	-0.69	-8.7
CNEBF	20.00	5.75	Call-Net Enterprises	8.25	-0.31	-3.6
CSCO	120.00	41.12	Cisco Systems Inc.	108.56	10.19	-8.6
ECILF	45.00	19.75	ECI Telecom	40.25	2.50	6.6
FORE	28.00	9.25	Fore Systems Inc	24.63	0.94	4.0
HRS	53.00	27.31	Harris Corp.	34.44	6.81	24.7
GMH	57.87	30.37	Hughes Electronics/GM	55.06	1.00	1.8
ERICY	34.00	15.00	LM Ericsson	25.31	0.38	-1.5
LU	67.00	26.68	Lucent Technologies	57.19	-6.19	9.8
MADGF	7.75	1.75	Madge Networks	2.75	0.25	10.0
NCDI	10.31	4.37	Network Computing Dev	5.44	0.50	10.1
NWK	20.62	7.31	Network Equipment Tech	7.75	0.06	0.8
NN	39.87	15.43	Newbridge Networks	36.69	3.75	11.4
NOK	85.68	29.50	Nokia Corp. (H)	77.06	7.88	9.3
NT	76.25	26.81	Northern Telecom Ltd	69.88	3.13	4.3
PAIR	21.87	6.00	Paragain Technologies Inc	11.19	1.31	13.3
PCTL	11.93	4.31	Picturetel	8.19	3.08	59.8
SFA	35.00	11.75	Scientific Atlanta	28.81	1.44	5.3
TLAB	116.25	31.37	Tellabs Inc. (H)	104.81	6.94	-6.2
USW	66.00	46.81	US West	54.56	1.50	2.7
VRLK	10.93	2.12	Vorilink	3.25	0.44	15.6
WSTL	12.75	2.75	Westell Technology Inc	7.06	0.00	0.0
XYLN	37.00	9.62	Xylan (H)	36.88	0.03	0.1
SEMICONDUCTORS, CHIPS & EQUIPMENT UP 0.3%						
ADPT	26.75	7.87	Adaptec	23.25	-0.25	-1.1
AMD	33.00	9.31	Advanced Micro Devices	16.38	0.69	4.4
ALTR	76.75	28.25	Altera (H)	74.50	5.25	7.6
ADI	39.62	12.00	Analog Devices	35.56	0.69	2.0
AMAT	71.62	21.56	Applied Materials	62.00	5.44	8.1
ASML	50.37	12.93	ASM Lithography Holding	45.69	2.81	5.8
HRS	53.00	27.31	Harris Corp	34.44	6.81	24.7
INTC	71.87	32.87	Intel Corp. (H)	57.56	-8.06	12.3
KLAC	65.00	20.75	Kla Instruments	54.81	0.50	0.9
LLTC	63.50	19.56	Linear Technology (H)	61.75	1.44	2.4
LSI	38.31	10.50	LSI Logic (H)	38.31	-1.31	-3.5
MXIM	62.56	22.31	Maxim Integrated Products (H)	60.88	2.25	3.8
MU	80.56	20.06	Micron Technology	45.81	-2.06	-4.3
MOT	86.00	38.37	Motorola (H)	80.69	-2.06	-2.5
NSM	24.18	7.43	National Semiconductor	11.75	2.69	29.7
STM	121.68	38.87	SGS-Thomson Microelectronics (H)	113.00	-3.69	-3.2
SLR	56.25	17.68	Solectron Corp (H)	50.06	-5.88	-10.5
TER	66.50	15.00	Teradyne	54.50	-3.94	-6.7
TXN	114.87	45.37	Texas Instruments	107.89	2.31	-2.1
UNPH	136.00	31.25	Uniphase (H)	127.63	3.38	-2.6
VTSS	59.00	17.12	Vitesse Semiconductor Corp	46.88	-4.19	-8.2
XLNX	49.87	14.87	Xilinx (H)	49.00	0.94	2.0
COMPUTER SYSTEMS OFF -3.8%						
AAPL	47.31	25.62	Apple Computer Inc	35.50	-0.88	-2.4
ASPX	12.50	1.62	Auspex Systems	9.00	0.58	-5.9
CPQ	51.25	22.93	Compaq	23.50	7.25	-23.6
DGN	21.81	7.00	Data General	11.00	0.25	2.3
DELL	55.00	16.68	Dell Computer Corp.	39.19	-4.50	-10.3
GTW	84.50	36.12	Gateway 2000 Inc	64.13	-11.25	-14.9
HWP	83.87	47.06	Hewlett-Packard Co.	70.31	0.50	0.7
HIT	78.93	40.18	Hitachi Ltd. (H)	73.56	-4.69	-6.0
IBM	199.25	106.00	IBM	172.44	-13.81	-7.4
MUEI	24.75	9.62	Micron (L)	10.19	0.31	-3.0
MOT	86.00	38.37	Motorola (H)	80.69	-2.06	-2.5
NATI	36.50	17.50	National Instruments Corp.	28.25	0.00	0.0
NCR	55.75	23.50	NCR	53.19	4.06	8.3
NIPNY	60.50	31.00	NEC	56.00	-4.00	-6.7
PRCM	13.25	3.50	Procom Tech Inc	4.31	0.13	3.0
SQNT	20.25	5.68	Sequent Computer Systems	8.94	-0.06	-0.7
SGI	20.87	7.37	Silicon Grafix	12.81	-0.13	-1.0
SNE	104.31	60.25	Sony	99.69	-2.81	-2.7
SUNW	72.50	19.18	Sun Microsystems	56.13	14.44	-20.5
TEXM	5.93	2.00	Texas Micro	4.63	0.38	8.8
TRCD	4.87	0.37	Tricord Systems	2.38	-0.06	-2.6
UIS	36.37	17.62	Unisys	29.69	0.81	2.8
INTERNET UP 5.7%						
AMZN	199.12	12.87	Amazon.com	190.25	9.25	5.1
AOL	175.50	17.25	America Online	146.50	14.44	-9.0
ATHM	198.00	23.50	@home Corp. (H)	148.06	-20.19	-12.0
CKFR	69.12	5.75	Checkfree (H	50.63	-0.38	-0.7
CYCH	27.75	5.87	Cybercash, Inc.	18.94	2.88	17.9
EOFY	15.00	3.81	Edify Corp. (H)	8.25	4.00	94.1
EGRP	144.50	5.00	ETrade Group Inc. (H)	95.25	3.00	3.3
XCIT	187.87	18.00	Excite, Inc. (H)	139.69	-11.69	-7.7
SEEK	100.00	14.87	Infoseek	65.13	-13.38	-17.0
LCOS	145.37	20.06	Lycos, Inc.	94.44	-7.19	-7.1
OMKT	29.12	4.25	Open Market, Inc	15.19	-0.13	-0.8
OTEX	42.50	10.00	Open Text Corp. (H)	36.13	-1.63	-4.3
PSIX	73.75	8.37	PSINet Inc. (H)	57.69	7.69	15.4
QDEK	3.00	0.25	Quarterdeck Corp.	0.51	0.00	0.0
SDTI	30.62	5.43	Security Dynamics	18.75	3.38	22.0
SPYG	32.25	8.62	Spyglass Inc.	16.63	0.69	4.3
YHOO	244.00	24.87	Yahoo Inc.	193.19	13.06	-6.3
STORAGE & PERIPHERALS OFF -2.1%						
AOPT	26.75	7.87	Adaptec Inc.	23.25	-0.25	-1.1
APCC	55.50	26.18	American Power Conversion	30.38	-0.13	-0.4
CANNY	25.93	17.00	Canon Inc.	24.00	-0.63	-2.5
DBD	44.06	19.12	Diebold Inc.	25.19	2.88	12.9
EK	88.93	60.81	Eastman Kodak Co	73.31	10.81	17.3
EMC	135.00	36.50	EMC	108.69	-2.56	-19.0
IOM	10.18	2.93	Iomega	5.13	0.19	3.8
LXK	120.62	45.43	Lexmark International Group, Nc	110.25	3.56	3.1
QNTM	29.93	10.81	Quantum	18.28	-0.28	1.5
SEG	44.25	16.12	Seagate Technology	27.94	-0.50	-1.8
STK	51.12	17.50	Storage Technology (L)	19.63	-8.38	-29.9
TEK	43.87	13.68	Tektronix	25.75	0.94	3.8
XRX	63.00	39.00	Xerox	55.00	3.63	6.2

KEY: **(H)** New annual high reached in period
(L) New annual low reached in period

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Compaq Tunes Strategy

But that number plunged to 46% last week.

At the same time, 71% of users surveyed said they were unfazed by Compaq's announcement early last week that commercial PC price wars would prompt its disappointing earnings report this Wednesday.

"I don't think Compaq is marketing its strength" with Tandem and Digital technologies and services, said Vince Petix, manager of geographic information services at Southern Company Services Inc., an energy holding company in Atlanta and one of the users surveyed. "I haven't seen any big changes about merging the technologies or management staff of Tandem or [Digital] with Compaq. And the longer they don't move toward pushing those strengths, the worse things will be for them."

Users said they expected Compaq to be doing more by now to bring Tandem's fault-tolerant capabilities and Digital's systems expertise to bear on Compaq's Windows NT systems.

Compaq's Plans

Compaq officials said they have heard such concerns. The company last week announced its NonStop eBusiness Solutions initiative, with plans to develop fault tolerance and security protection for companies that depend on always-on Web shopping and communication with partners.

Compaq officials also said they're working with Microsoft Corp. to make Windows NT servers 99.999% reliable (see related story, page 29). And last fall, Compaq said it would move high-end Tandem servers to the Digital Alpha chip by 2001 [CW, Sept. 21].

At Innovate, Compaq's annual showcase customer event, users were generally upbeat. Of 16 users interviewed, nearly all said they had no problems with Compaq's technology strategy and the company's support for their Digital or Tandem systems.

Others said they have seen improvement. "The purchases of Tandem and [Digital] have made it a lot stronger company," said Alan Bourassa, director of distribution systems at online bookseller Barnesandnoble.com in New York.

Away from the Houston confab, however, there was more uncertainty.

Users surveyed said they were unclear about what Compaq is saying it will do about combining technologies.

"My impression is that there are still just three separate companies under one, and it would make more sense if they made a Compaq machine with more cross-fertilization from the Tandem or Digital line," said Tony Albanese, manager of technology at Dun and Bradstreet Corp. in Murray Hill, N.J.

Meanwhile, George Bennett, information systems manager at GE Aircraft Engines in Washington, said he sees evidence that Compaq's service is improving. The vendor is "trying to present a unified front" with its services division compared with several months ago, when there were representatives for different functions, Bennett said.

But Laurie McCabe, an analyst at Summit Strategies Inc. in Boston, said that Compaq keeps talking about standards-based systems but then uses proprietary technologies such as Non-Stop Kernel, OpenVMS and Digital Unix.

Compaq has "been running at hyperspeed to help users make sense of the chaos, but it keeps adding new products to the mix," McCabe said, such as its endorsement of the Monterey 64-bit Unix version [CW, April 12].

Senior editor Jaikumar Vijayan contributed to this report.

Compaq Hits TCO for PCs

Compaq users were buoyed that the world's leading PC maker plans to address PC service and management costs for enterprises. But they want to hear more than talk.

At its Innovate Forum 99 last week, Compaq announced PC Lifecycle Solutions, 29 hardware, software and service offerings designed to help users control management costs for Compaq Deskpro PCs, Armada laptops and Professional workstations.

Separately, Compaq officials said that before September they plan to release desktops that incorporate keyboard buttons for instant access to the Internet, similar to the consumer machines it sells. Compaq also plans by September to sell smart card readers and fingerprint security readers with corporate desktops.

Lifecycle includes services that would alert companies by e-mail or by Web site postings about hardware and software version changes. Officials vowed to slow PC upgrades to once per year, with 60 days notice of critical component or software changes.

Also, large firms can hire Compaq to deploy new machines, customizing hardware and software configurations as needed.

"I see these announcements as making Compaq more of a customer service company and less of a box vendor," said Jim Dorsett, information systems manager at Coulter Corp. in Miami, a hematology products maker.

Stefaan De Belder, manager of systems engineering at Rijkswacht, the state police in Brussels, said he would welcome having Compaq customize new machines, a time-consuming process for his information technology shop normally. When new machines are released, it's hard to find temporary IT staff, making the new Compaq solution desirable, De Belder said.

But some users thought Compaq was pitching a management concept around some rather simple ideas that it should have been applying already. Total cost of ownership "is a priority for us, and we don't have all the tools we need to keep costs down, but I was hoping for a little more meat from Compaq than their saying they would e-mail you when a new [software] version is needed," said Mike Dobney, a project manager at Coca Cola Enterprises Inc. in Dallas. – *Matt Hamblen*

Continued from page 1

PC Contracts: Weasel Words

top reasons for leasing rather than buying PCs, said Theresa Thayer, an IDC analyst. That is, a company that buys 10,000 PCs has a heck of a time figuring out what to do with them when upgrades arrive. Simply returning them to the leasing company is often the simplest option, she said.

But leasing isn't easy.

"It's fashionable right now. But a lot [of people] are jumping into it and don't know what they're doing," said Frances O'Brien, an analyst at Gartner Group Inc. in Stamford, Conn.

Contracts often contain hidden costs and complications, she said (see chart).

For example, several PC lessors require users to return the machines at the end of the lease in original packaging or pay a fine. "You have to hold 10,000 boxes for 36 months. It's ridiculous," she said.

A common gotcha is "interim rent," said Joe Auer, president of International Computer Negotiations Inc. in Winter Park, Fla., and a *Computerworld* columnist.

The trick is defining when exactly the contract starts. Users may think it begins the day the hardware arrives or is officially accepted. But often, the lessor defines commencement date as the first day of the month after the equipment is accepted, Auer said.

So if the servers and PCs arrive midmonth, you pay for an extra two weeks, he said. Some vendors stretch it to the following quarter, Auer said.

Trust Your Vendor

"You have to feel very comfortable that your lessor will not create an adversarial situation for you," said Chuck Gately, former chairman of Information Technology Resellers Association in Reston, Va.

The trade group for computer lessors and resellers advises its members to write "fair and clear" contracts, Gately said.

Although PC leasing, in particular, has become more popular in the past year, it may not be as financially beneficial as it was a few years ago. That's because the residual value of the average PC is dropping fast.

Lessors know that a PC they get back at the end of a typical three-year lease won't be worth as much as a 3-year-old PC was worth in the past. So they try to make as much money as they can on the contract, which means less favorable pricing for users, O'Brien said.

For leasing to pay off, IT managers must know how the lease price is calculated. Simple, right? Wrong, said Bram Reinders, IT manager at Akzo Nobel NV, a Dutch chemical company with U.S. offices in Chicago.

For example, users will lease a $1,000 PC for three years and then meet with the vendor to renegotiate the deal for another three years. Although the PC isn't worth as much as it was originally, vendors will try to use the same original PC value used in the first three years, said Reinders, who leases desktops and servers.

National correspondent Julia King contributed to this report.

Read the Fine Print

Unclear phrases and how to improve them:

"Reasonable amount of time"
Specify number of days

"Lessor may ..."
Get a commitment: The lessor will or won't

"From time to time"
Change to "during normal business hours" or "after X days notice in writing"

SOURCE: GARTNER GROUP INC., STAMFORD, CONN.

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Where the Heck Am I?

Is it worth $440 to $530 to never be lost again? Casio Computer Co. in Tokyo (*www.casio.com*) has developed the first wristwatch with a built-in Global Positioning System (GPS). The 5-oz. watch picks up signals from 27 satellites – and of course, tells time. It's 60% less bulky than handheld GPS devices, making it more convenient for outdoor sports, Casio says.



INSIDE LINES

DON'T BET ON IT The great state of **Nevada**, home of legalized gambling and **Wayne Newton**, has backed off from its plan to bring some order to the wild-and-woolly world of consulting. State lawmakers have tabled a bill that would require **licensing all business consultants** after even the proposed law's backers said it was **too restrictive**. Under the proposal, a consultant would have to reside in Nevada, pass a written exam and be "a person of fiscal integrity who has not committed any acts involving **dishonesty** or **moral turpitude**." Backers are now pushing for a version that would make licensing an option.

AFTER MELISSA, HE LOOKS DOWNRIGHT FRIENDLY Less than a week after his release from jail on April 9, reformed cracker **Justin Peterson**'s first target was **Pacific Bell** – sort of. Last week Peterson (a.k.a. "Agent Steal") showed up at the Internet World trade show in Los Angeles and headed straight for PacBell's booth on the show floor. But it was just to shake hands all around; apparently, all's forgiven. In 1993, Peterson admitted to **stealing credit data**, misappropriating $150,000 and **rigging** a radio call-in contest by **hijacking** PacBell phone lines.

FIN DE SIECLE Y2K mania just keeps getting, uh, more manic. **Arial Marketing Inc.** in Cody, Wyo., has launched a Web site to help find "**Y2K-advantaged**" properties, such as those with wells instead of city water systems. They call it "**y2kland.com.**" . . . Toronto-based adventure clothier **Tilley Endurables** is offering a 25% discount on **quick-drying underwear** for customers who mention they're stockpiling them for Y2K. . . . The first and maybe last movie with a Y2K subplot opens Friday. ***Entrapment*** stars **Sean Connery** as an art thief planning a big heist tied to a Y2K security glitch.

OVERHEARD Dr. Larry Faulkner, president of the University of Texas at Austin, on **going pro** before graduation: "We're not only having trouble keeping our IT employees, we're having trouble keeping our IT students. So on behalf of mom and dad, **please don't hire our students** before they graduate." . . . **Ray Lane**, Oracle president and COO, on the language as she is spoke: "**Amazon** is now **a verb**. You don't want to be **Amazoned**, you want to Amazon your competition."

HAIL AND FAREWELL Last week saw the end of an era, when Boston's **Computer Museum** announced it will merge with Boston's **Museum of Science**, ending two decades as an independent institution. The Computer Museum's annual **Computer Bowl** will still be held, though, and plans will go ahead for a **vintage-computer museum** near Silicon Valley. This week it's also **goodbye** for a somewhat-less-venerable institution: After more than 12 years, this is **the final Inside Lines** column. Don't worry, though – we'll have something new for you next week. You can still send news editor **Patricia Keefe** your news tips and tidbits at **patricia_keefe@computerworld.com**, or call **(508) 820-8183**.

ANOTHER Y2K SNAFU: CHAMPAGNE SHORTAGE

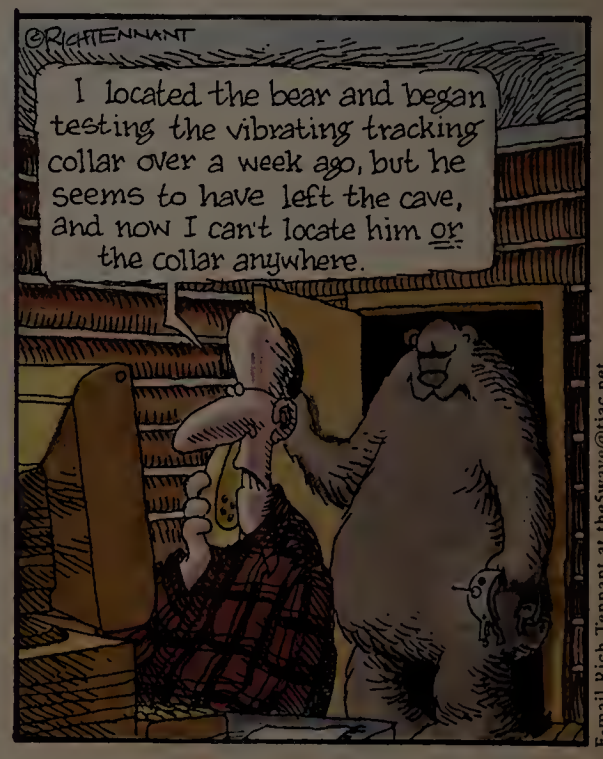
FIRST THERE WAS A SHORTAGE of computer programmers to fix the year 2000 problem. Then came reports of a shortage of fireworks technicians and hotel rooms for millennium celebrants. Now it's uncertain if there will be enough premium champagne to ring in New Year's 2000 around the world, says the Champagne Wine Information bureau in New York. But Gary Heck, chairman and president of Korbel Champagne Sellers in Guerneville, Calif., is prepared for a run on the bubbly. His company is analyzing shipment trends on an IBM AS/400. His worst-case scenario? "Even if we run out of champagne at the end of November, retailers will still be able to order 200,000 cases from us in December," Heck says.

— Thomas Hoffman

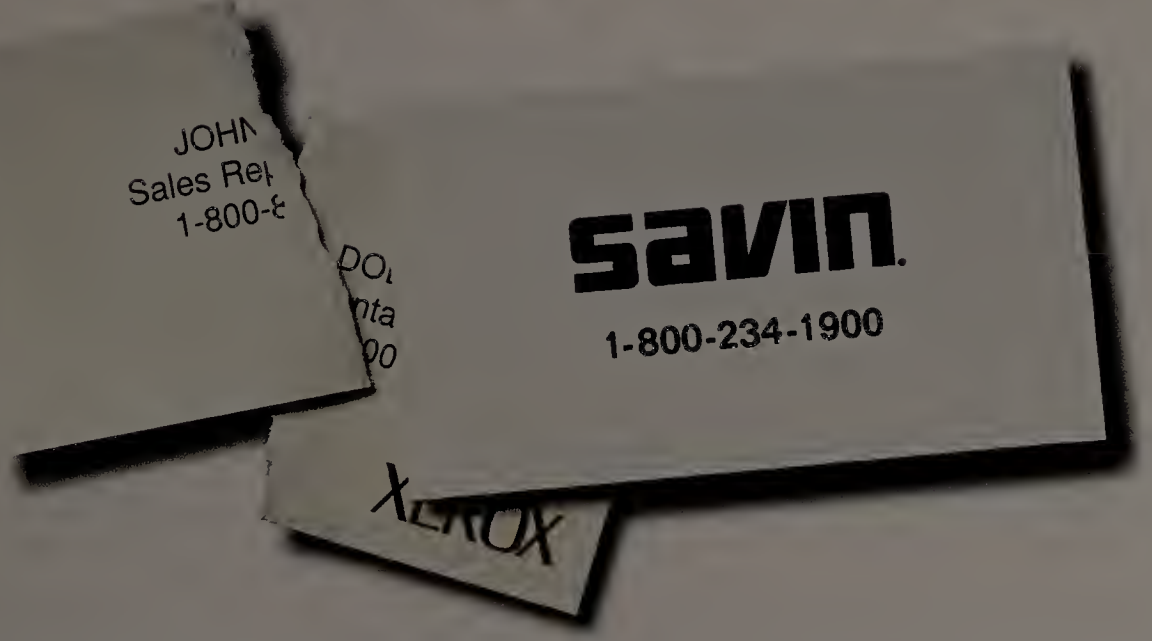


GARY HECK, 52, chairman and president of Korbel Champagne Sellers, says first-quarter sales of champagne are up 68% compared with last year

The 5th Wave



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